Agricultural Water Management Plan

Prepared pursuant to Water Code Section 10826

By

Columbia Canal Company

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Adopted By Columbia Canal Company
Board of Directors December 13, 2012

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Attachments

Section 1 Introduction

The Columbia Canal Company (Columbia) has prepared a BOR Water Management Plan update using the 2011 criteria. That plan was adopted by the Columbia Board during their regular meeting on December 13, 2012. The adopted plan was then submitted to BOR during late-December 2012. The Agricultural Water Management Plan, which is the subject of this report, references the recently adopted BOR plan, included herewith as Attachment A. The state requirements differ somewhat from those of the BOR and information addressing those additional state plan requirements is described. Were the requirements are similar, the BOR plan is referenced. The State Plan was adopted by the Columbia Board during their regular meeting on December 13, 2012. The Columbia Board Resolutions for adoption of both plans are included in Attachment B. The checklist of Water Code requirements is included in Attachment C.

Columbia was formed August 3, 1926 as a privately held mutual water company for purposes of managing riparian water rights held by the landowners. The landowners within the Columbia boundary are the mutual water company owners with each share of ownership equal to one-acre. Agricultural land within the Columbia boundary is riparian to the San Joaquin River and landowners historically diverted water for beneficial agricultural purposes prior to formation of the mutual water company. As a result of these historic riparian diversions, Columbia holds, in trust on behalf of its landowners, significant pre-1914 riparian rights to San Joaquin River waters that were historically diverted for irrigation. These water rights are appurtenant to the land and the property of the landowners.

With construction of Friant Dam by the US Bureau of Reclamation (BOR) these historic riparian water rights were disrupted. To make the construction of Friant Dam along with the subsequent storage and diversion of San Joaquin River water to other water users both inside and outside the basin feasible, the BOR agreed to provide "substitute water" from the Delta. This substitute water supply was to be conveyed from the Delta via the Delta-Mendota Canal and Mendota Pool to satisfy the riparian water rights held by Columbia. Columbia now receives surface water deliveries under the terms and conditions of a "Contract For Exchange Of Waters" (Exchange Contract) negotiated with the BOR. The Exchange Contract provides for the annual delivery of 59,000 acre-feet under non-critical year hydrologic conditions. Under critical year hydrologic conditions, the delivery is reduced to 45,000 acre-feet. Columbia has the right to divert its riparian right waters from flow released from Friant Dam to the San Joaquin River under conditions when water from the Delta is not available in sufficient quantities to meet contractual quantity requirements. By contractual agreement with the Friant Unit Contractors and by the decision of the District Court in *Westlands Water District, San Benito Water District vs United States of America*, No. CV-F-94-5217-OWW, Columbia together with the other Exchange Contractors, have first priority to flows from the Delta exported by BOR.

1.1 Description of Previous Water Management Activities

Columbia canals historically suffered from high seepage losses. During the late 1990's Columbia embarked on a program to begin lining the conveyance/distribution system to reduce canal seepage. When the lining program started, annual seepage losses exceeded 30 percent of the delivered surface water. Those losses have been reduced by half to about 15 percent. The canal lining program will continue as funds become available, which will result in additional water conservation savings..

Columbia staff has assisted water users in applying for and acquiring grant funding to install low volume irrigation systems. There were 11,350 acres irrigated with these low volume systems in 2011, compared to only 1,200 acres in 2000. Columbia has a number of programs devised to efficiently operate and maintain the conveyance/distribution system, and to assist water users in conserving irrigation water. Refer to Attachemnt A, Section III for a description of these efforts.

The Columbia Exchange Contract with the BOR is different from a typical BOR water service agreement A major consideration is the pre-1914 riparian water right, which is the property of the Columbia share holders. Columbia is not subject to many of the contract terms and provisions contained in the BOR water service agreements. Columbia is not required to periodically prepare and submit BOR Water Management Plans in accordance with Reclamation Reform Act or CVPIA requirements. However, the Columbia Board directed staff to prepare and submit A BOR Water Management Plan in 2004, and that plan has now been updated with the recent submittal.

1.3 Coordination Activities

1.2.1 Notification of AWMP Preparation

Columbia notified both Madera and Fresno Counties of the AWMP preparation and posted notice in the San Joaquin Exchange Contractors Water Authority newsletter. Columbia made copies of the draft document available at the Columbia office near Firebaugh and Water Authority office in Los Banos. Columbia also indicated that electronic copies would be provided, if requested. See Attachment D for copies of the letters, and Water Authority newsletter. Columbia accepted comments until December 31, 2012.

1.2.2 Public Participation

Columbia did not receive requests for the draft document or public comments.

1.3 AWMP Adoption and Submittal

1.3.1 AWMP Adoption

The AWMP was adopted by the Columbia Board of Directors at their regular meeting, December 13, 2012. See Attachment B for a copy of the Board resolution.

1.3.2 AWMP Plan Submittal

Columbia has made the required submittals within 30 days of adoption to the following:

- DWR
- Fresno County Planning Department
- Fresno County LAFCO
- Fresno County library
- Madera County Planning Department
- Madera County LAFCO
- Madera County Library
- California State Library

1.3.5 AWMP Availability

Columbia does not have a website address. Columbia submitted the required document to the DWR in accordance with the 30 day requirement. The AWMP is available on the DWR website. Electronic copies are also available by contacting the Columbia office near Firebaugh or the San Joaquin River Exchange Contractor Water Authority in Los Banos.

Section 2 Description of the Agricultural Water Suppler and Service Area

Refer to BOR Water Management Plan, Attachment A.

Section 3 Description of Quantity of Water Uses

Refer to BOR Water Management Plan, Attachment A.

Section 4 Description of Quantity and Quality of the Water Resources of the Agricultural Water Supplier

Refer to BOR Water Management Plan, Attachment A.

Section 5 Water Accounting and Water Supply Reliability

Refer to BOR Water Management Plan, Attachment A.

5.1 Water Supply Reliability

The Columbia water supply provided under the terms and conditions of the Exchange Contract is exceptionally reliable. Seldom has Columbia been subject to critical year water supplies, and even under those conditions groundwater pumping from private wells has provided a full supply necessary to meet crop water demand. Columbia also has the option of taking deliveries from the San Joaquin River should Delta conditions affect water diversions or salinity such that Exchange Contract terms and conditions can not be met. The San Joaquin River Restoration Act has resulted in continuous flows in the river,

which makes that option a reality for Columbia. This flexibility is important should some unforeseen event make water deliveries from one source unavailable.

The groundwater basin underlying Columbia has been in a state of long term overdraft primarily from agricultural pumping to the east where surface water is unavailable. Increased recharge from the San Joaquin River associated with the Restoration Act should benefit Columbia water users by increasing available groundwater and improving water quality.

Section 6 Climate Change

Within the next 20 years, DWR expects that water supplies, water demand, sea level, and the occurrence and increased severity of floods could be affected by climate change. Snowpack in the Sierra Nevada provides about 65 percent of California's water supply. Estimates indicate that by 2050 the Sierra snowpack could be significantly reduced. Much of the precipitation is expected to fall as rain instead of snow during winter, which likely cannot be efficiently stored in the state's current water system for later use. The climate may also become more variable and extreme, bringing more droughts and floods. The state believes that agricultural water suppliers may need to be prepared to adapt to greater variability in weather patterns. Some of these potential changes include:

1. **Water Demand** — Shorter winters, more hot days and nights, and a longer irrigation season may increase water demand.

2. **Water Supply and Quality** — Reduced snowpack, shifting spring runoff to earlier in the year has the potential to impact water supply.

3. **Sea Level Rise** — The Delta may be at greater risk to increased salinity due to sea level rise. It is expected that sea level may continue to rise due to the warming of the oceans. This may result in near-shore ocean changes such as stronger storm surges, more forceful wave energy, and more extreme tides. This may also affect levee stability in low-lying areas and increase flooding.

4. **Disaster** — Disasters are expected to become more frequent as climate change brings increased climate variability, resulting in more extreme droughts and floods.

Irrigation demand in Columbia may increase as temperatures rise and rainfall becomes more variable. Columbia water users now pump groundwater from their private wells to supplement Exchange Contract water deliveries. These water users have the ability to pump adequate water to make up any additional shortfall that may occur from increasing water demand. The groundwater aquifer underlying Columbia will benefit from additional recharge associated with increased San Joaquin river flows. These increased flows will occur from the San Joaquin River Restoration program, and more water releases from Friant Dam that could occur from changes in precipitation patterns. Further, Columbia may decide to construct groundwater wells to pump water into the canal system to augment Exchange Contract surface water deliveries.

Permanent crops in Columbia, primarily almonds, may be adversely affected by climate change. These types of permanent crops are not easily shifted to alternative crops. Almonds are grown further south in the San Joaquin Valley under conditions that are much hotter and dryer, and with less precipitation than Columbia. It follows that almond production in Columbia would continue even with hotter dryer conditions. Almond orchards have a productive life of about 25-years after which the orchard is removed and replanted. It makes sense to assume that continued almond varietal improvement will continue from efforts of plant breeders. These continuing efforts will likely result in the development of plant material that is suited to future climatic conditions.

Columbia has the right to take water deliveries either from the Delta or San Joaquin River. The BOR has certain contractual obligations to deliver irrigation water from the Delta that meets the volume and water quality standards set forth in the Exchange Contract. Changing Delta conditions are a concern for Columbia. However, should the BOR become unable to supply irrigation water of sufficient quantity or quality from the Delta, Columbia could then elect to take their water delivery from the San Joaquin River. The potential for more critical water supply years and reduced surface water deliveries would require Columbia to place more reliance on groundwater. As previously discussed, groundwater conditions are expected to improve in Columbia. Columbia feels that any potential changes from climate change on surface water supply would be more than offset by increased groundwater pumping.

Flooding risk may increase from more severe rainfall patterns and warmer winter rains. Columbia facilities could be potentially affected by San Joaquin River flood flows. However, the San Joaquin River bypass channel was constructed to protect the City of Firebaugh from San Joaquin River flood flows. Due to the location of Columbia, Columbia land is afforded this same protection. Future enlargement of the San Joaquin River channel associated with the San Joaquin River Restoration Act, also will provide flood flow protection.

Given the excellent reliability and low cost of the Columbia water supply, Columbia land will continue to be highly sought after for production of agricultural crops.

Section 7 Water Use Efficiency Imformation

Refer to BOR Water Management Plan, Attachment A.

Section 8 Supporting Documentation

8.1 Legal Certification and Apportionment Required for Water Measurement.

Legal certification and apportionment are not required. All water deliveries are made to and measured at the farm headgate.

8.2 Engineer Certification and Apportionment Required for Water Measurement

Engineer certification and apportionment are not required. All water deliveries are made to and measured at the farm headgate.

8.3 Description of Water Measurement Best Professional Practices

Refer to BOR Water Management Plan, Attachment A.

8.4 Documentation of Water Measurement Conversion to Volume

Columbia has historically measured water deliveries to the farm headgate to insure that share holders receive water volumes in accordance with their water right amounts. Measurement devices that require reading conversions to calculate volume have been in place for many years. Should a device be repaired or replace, Columbia engages an engineer to calibrate the repaired/new device. Columbia does not have documentation other the actual data used to make the necessary conversion.

8.5 Device Corrective Action Plan Required for Water Measurement

Refer to BOR Water Management Plan, Attachment A

Attachment A

BOR Water Management Plan, December 2012

Columbia Canal Company
Water Management Plan
2011 Criteria

Date of first draft – September 2012
Date of final – December 2012

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Section I: Description of the District

District Name: Columbia Canal Company

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Web Address **N/A**

A. History

The Columbia Canal Company (Columbia) was formed August 3, 1926 as a privately held mutual water company for purposes of managing riparian water rights held by the landowners. The landowners within the Columbia boundary are the mutual water company owners with each share of ownership equal to one-acre. The original area encompassed 16,565 acres. Agricultural land within the Columbia boundary is riparian to the San Joaquin River and landowners historically diverted water for beneficial agricultural purposes prior to formation of the mutual water company. As a result of these historic riparian diversions, Columbia holds, in trust on behalf of its landowners, significant pre-1914 riparian rights to San Joaquin River waters that were historically diverted for irrigation. These water rights are appurtenant to the land and the property of the landowners. In contrast, an Irrigation District is a public entity formed under the laws of the State of California. The water rights are held by the state and the district has a contract with either the state of federal government for the delivery of a contractual amount of irrigation water.

With construction of Friant Dam by the US Bureau of Reclamation (BOR) these historic riparian water rights were disrupted. To make the construction of Friant Dam along with the subsequent storage and diversion of San Joaquin River water to other water users both inside and outside the basin feasible, the BOR agreed to provide "substitute water" from the Delta. This substitute water supply was to be conveyed from the Delta via the Delta-Mendota Canal and Mendota Pool to satisfy the riparian water rights held by Columbia. Columbia now receives surface water deliveries under the terms and conditions of a "Contract For Exchange Of Waters" (Exchange Contract) negotiated with the BOR. The Exchange Contract provides for the annual delivery of 59,000 acre-feet under non-critical year hydrologic conditions. Under critical year hydrologic conditions, the delivery is reduced to 45,000 acre-feet. Columbia has the right to divert its riparian right waters from flow released from Friant Dam to the San Joaquin River under conditions when water from the Delta is not available in sufficient quantities to meet contractual quantity requirements. By contractual agreement with the Friant Unit Contractors and by the decision of the District Court in *Westlands Water District, San Benito Water District vs United States of America*, No. CV-F-94-5217-OWW, Columbia together with the other Exchange Contractors, have first priority to flows from the Delta exported by BOR.

The Exchange Contract does not provide a full water supply necessary to meet irrigation water demand for agricultural crops grown within Columbia. Even under non-critical hydrologic conditions, landowners in Columbia pump groundwater to supplement surface water deliveries. Columbia also is allowed, on a temporary basis, to carry over winter and early spring water per the terms of a rescheduling agreement negotiated annually with BOR. The ability to reschedule this water facilitates

efficient water use and reduces the need for Columbia landowners to pump additional groundwater during the summer months.

Columbia now encompasses 16,561.58 gross acres. The cropped area in 2011 was approximately 15,403 acres.

1. Date district formed: August, 1926 *Date of first Reclamation contract:* July, 1939

Original size (acres): 16,565 *Current year (last complete calendar year):* 2011

2. Current size, population, and irrigated acres

	2011
Size (acres)	16,561.58
Population served (urban connections)	**N/A**
Irrigated acres	15,403

3. Water supplies received in current year

Water Source	*AF*
Federal urban water (Tbl 1)	0
Federal agricultural water (Tbl 1)	59,000
State water (Tbl 1)	0
Other Wholesaler (define) (Tbl 1)	0
Local surface water (Tbl 1)	0
Upslope drain water (Tbl 1)	0
District groundwater (Tbl 2)	0
Banked water (Tbl 1)	0
Transferred water (Tbl 1)	0
Recycled water (Tbl 3)	0
Other (define) (Tbl 1)	0
Total	59,000

4. Annual entitlement under each right and/or contract

The Exchange Contract provides for the annual delivery of 59,000 acre-feet under non-critical year hydrologic conditions. Under critical year hydrologic conditions, the delivery is reduced to 45,000 acre-feet. The Exchange Contract also provides for maximum monthly water entitlements.

	AF	*Source*	*Contract #*	*Availability period(s)*
Reclamation Urban AF/Y	**N/A**			
Reclamation Agriculture AF/Y	59,000	Exchange Contract	I1r-1144	January – December (12 Months)
Other AF/Y	**N/A**			

5. Anticipated land-use changes. For Ag contractors, also include changes in irrigated acres.

The historic use of Columbia land has been for the production of irrigated agricultural crops and that use is protected and supported by the current exclusive agriculture (AE) zoning designation. Land use changes would require action by the Fresno/Madera County Board of Supervisors or a change to the Land Use Element of the County General Plans. The actions necessary to allow land use changes in Columbia are not anticipated.

The Columbia cropping pattern has been evolving from field/row crops to orchards since the late 1990's, resulting primarily from the increased commodity value of the production and increasing costs of irrigation water. In 2000, there were some 1,442 acres planted to orchards. In 2011, orchard crops encompassed 11,350 acres, an increase of nearly 800 percent. Orchards now occupy nearly 75 percent of the total cropped area in Columbia. This trend of increasing orchard crop planting is expected to continue and growers are in the process of converting more field/row crop land to orchards.

6. Cropping patterns (Agricultural only)

List of current crops (crops with 5% or less of total acreage) can be combined in the 'Other' category.

Original Plan (1993)		*Previous Plan (2000)*		*Current Plan*	
Crop Name	*Acres*	*Crop Name*	*Acres*	*Crop Name*	*Acres*
Alfalfa	2,167	Alfalfa	3,245	Alfalfa	1,817
Cotton	6,879	Cotton	6,153	Corn	582
Melons	792	Pasture	402	Corn Silage	400
Pasture	402	Wheat	1,757	Cotton	443
Wheat	969	Tomato	369	Pasture	390
Tomato	265	Almonds	1,442	Wheat	212
				Almonds	8.915
				Pistachios	210
				Pomegranates	2.224
Other (<5%)	2,526	*Other (<5%)*	1,450	*Other (<5%)*	210
Total	14,000	*Total*	14,818	*Total*	15,403

(See Planner, Chapter 3, Addendum D for list of crop names)

7. Major irrigation methods (by acreage) (Agricultural only)

The conversion to orchards has also resulted in a move from gravity and sprinkler irrigation to micro-irrigation systems. All orchard crops in Columbia are irrigated with these micro-irrigation systems. The acreage irrigated by these micro-irrigation systems will continue to increase as more land is converted from field/row to orchard crops. Micro-irrigation systems can be operated at high irrigation efficiencies, thus providing a significant opportunity for Columbia growers to conserve irrigation water supplies. Gravity irrigation includes both furrows and graded basins. Length of water run is ¼ mile or less.

Original Plan (1993)		*Previous Plan (2000)*		*Current Plan*	
Irrigation Method	*Acres*	*Irrigation Method*	*Acres*	*Irrigation Method*	*Acres*
Level Basin		Level Basin		Level Basin	
Furrow/Flood	9,870	Furrow/Flood	9,200	Furrow/Flood	4,053
Sprinkler	4,130	Sprinkler	3,600	Sprinkler	
Low-volume		Low-volume	1,200	Low-volume	11.350
Multiple		Multiple		Multiple	
Other		*Other*	818	*Other*	
Total	14,000	*Total*	14,818	*Total*	15,403

B. Location and Facilities

Columbia is located in the valley trough area of the central San Joaquin Valley northeast of the City of Mendota and east of the City of Firebaugh. Most of the land in Columbia is located adjacent to and east of the San Joaquin River in Madera County (15,722.25 acres) with a small area (839.33 acres) south of the San Joaquin River in Fresno County.

The primary source of irrigation water is from surface deliveries with additional water pumped from grower owned wells to supplement these surface water deliveries, which is required periodically. Columbia does not pump supplemental groundwater.

See Attachment A for maps containing the following: incoming flow locations, turnouts (internal flow), and outflow (spill) points, conveyance system, storage facilities, operational loss recovery system, district wells and lift pumps, water quality monitoring locations, and groundwater facilities.

1. Incoming flow locations and measurement methods

Location Name	*Physical Location*	*Type of Measurement Device*	*Accuracy*
Main Pumping Plant	Mendota Pool	Propeller Meter	+/- 2%

2. Current year Agricultural Conveyance System

Columbia typically diverts surface water from the Mendota Pool, but also can divert water directly from the San Joaquin River, if necessary. Irrigation water is conveyed and distributed through a system of lined and unlined gravity canals. Water deliveries are made and measured to water users using farm/field turnouts. Columbia has historically measured all of the surface water delivered to water users. The turnouts and metering facilities were updated during May and June 2012 to more fully comply with the requirements of the California Water Code SBX7-7. Water control in the distribution system is through a series of weir control structures that are manually operated. The weirs also act to pond water in the canal system providing for limited storage capacity (about 475 acre-feet) to buffer water delivery demands. Two main canals, the Columbia Canal and Ridge Ditch, are the major water conveyance facilities. The Columbia Canal and Ridge Ditch feed nine smaller lateral canals that provide for additional water distribution in the Columbia service area. These facilities comprise the major conveyance and distribution system in Columbia. A number of smaller earthen ditches provide for additional water distribution. These major facilities comprise about 42.0 miles of canals or about 70 percent of the Columbia canal facilities with the smaller earthen ditches accounting for the remaining 30 percent. Columbia uses the Ag Water Management program developed by Cal Poly – San Luis Obispo to manage the water conveyance/distribution facilities.

Columbia soils are typically coarse textured, which resulted in canal seepage losses. Even though these seepage losses recharged the underlying groundwater basin, this was not considered an efficient way of managing Columbia water resources. Columbia embarked on a program during the late-1990's to conserve these losses by lining the conveyance/distribution canals with concrete and membranes. The program began with the lining of the major conveyance and distribution facilities, and will continue on with the smaller earthen canals as funding becomes available. Columbia's intent is to line all canal facilities as funding becomes available. However, Columbia is awaiting federal government decisions associated with land acquisition for San Joaquin River Restoration before proceeding with canal lining in the vicinity of the main pump stations. There are about 61.1 miles of canals in Columbia that encompass some 141.7 surface acres. The Columbia canal lining effort has included facilities that

encompass about 113.1 acres. Thus, about 80 percent of the total area used for water conveyance and distribution has been lined to date. This significant water conservation effort has reduced seepage losses by half from about 30% down to 15% of the contract allocation.

Miles Unlined - Canal	*Miles Lined - Canal*	*Miles Piped*	*Miles - Other*
32.6	28.5	N/A	N/A

3 Current year Urban Distribution System
N/A

4. Storage facilities (tanks, reservoirs, regulating reservoirs)
The Columbia system does not include a water storage reservoir. Columbia considered the construction of a small storage reservoir in the northern part of the service area. The results of the engineering analysis indicated that the costs exceeded the benefits and any future reservoir construction is not now anticipated. There is a small recovery basin located at the north end of the system that is use to capture and recirculate tailwater.

Name	*Type*	*Capacity (AF)*	*Distribution or Spill*
N/A			

5. Description of the agricultural spill recovery system and outflow points.
The Columbia system is operated as a closed water delivery system and operational spills are not allowed to occur. Irrigation tail water is managed/reused on-farm or discharged back to the conveyance/ distribution system for reuse. Several Columbia relift pumps are strategically located and are used to pump irrigation tailwater back into the conveyance/distribution system.

6. Agricultural delivery system operation (check all that apply)
The Columbia water delivery system is operated as an on-demand system. Water users are required to make water orders 24-hours in advance of any scheduled delivery. However, Columbia coordinates with water users to provide water deliveries with as little as 2 to 4 hours prior notice, if those deliveries can be made without affecting other water users and they facilitate operation of the system.

Scheduled	*Rotation*	*Other (describe)*
X		

7. Restrictions on water source(s)

Source	*Restriction*	*Cause of Restriction*	*Effect on Operations*
Surface Water	Summertime flow limits	Contract Condition	Equitable Water Service
Surface Water	Delta export restrictions	Delta Operations	Water Supply Concerns
Surface Water	Delta export restrictions	Endangered Species Act	Water Supply Concerns
Surface Water	Mendota Pool salinity	Delta operations	Canal Management

8. Proposed changes or additions to facilities and operations for the next 5 years
Columbia does have a current schedule for facility upgrades. Columbia has lined 28.5 miles of the 61.1 mile long canal system, which equates to about 80 percent of the total canal surface area. Columbia's intent is to line all canal facilities and will continue with the process of completing the canal lining program for the remaining unlined facilities as funding becomes available.

C. Topography and Soils

Columbia soil conditions were surveyed and described by the National Resource Conservation Service (NRCS) in the "Soil Survey of Madera County", 1962, and the "Soil Survey of Eastern Fresno Area", 1971.

1. Topography of the district and its impact on water operations and management
The NRCS soil survey data indicates that soil slope ranges from 0 to 1 percent. Based on topographic mapping, the direction of fall in Fresno County is predominately from north to south with the direction of fall in Madera County from south to north at about 1 foot per mile. From east to west Columbia land is relatively flat with little slope. Soil slope has little effect on water operation other than the cost associated with operating the tailwater relift pumps.

2. District soil association map (Agricultural only)
The general soils map showing soil associations, map showing soil mapping units, and the descriptions of NRCS soil series soils occurring in Columbia are included in Attachment B.

Soils in the vicinity of Columbia are those of the Columbia – Temple and Traver – Chino Soil Associations. Some of these soils were affected by slight to strong salinity and alkalinity in their native condition. Columbia land has been farmed since the early 1900.s and reclamation by soil amendments, deep tillage and leaching have reduced the concentration of salts and alkali to acceptable levels. Gravity irrigation was initially employed and the land has been graded to obtain the proper end and side fall. Ongoing soil management activities, like periodic applications of soil amendments and leaching, are employed to maintain soil quality. Columbia soils are well suited to the range of crops produced, which include forage, field/row and orchard crops. The soil associations are described below.

- Columbia – Temple Association soils formed in recent alluvium along the flood plain of the San Joaquin River. The soil surface is nearly level with predominate slope ranging from about 0 to 1 percent. This association is comprised of non-calcareous to strongly calcareous, non-saline – alkaline or slightly saline – alkaline, imperfectly drained. Moderately coarse textured to moderately fine textured soils. These soils are not affected by a shallow water table. Management considerations for these soils are associated with moderately coarse texture, imperfect drainage, and salinity/alkalinity.

- Traver – Chino Association soils formed in older alluvium in basins. The soil surface is nearly level with predominate slope ranging from about 0 to 1 percent. This association is comprised of slightly to moderately calcareous, good to imperfectly drained, non-saline and non-alkaline to strongly saline – alkaline, moderately coarse textured to medium textured soils. Groundwater pumping for irrigation has lowered the water table and in combination with reclamation has improved drainage. These soils are not affected by a shallow water table. Management considerations for these soils are associated with moderately coarse texture and salinity/alkalinity.

Soil Association	*Estimated Acres*	*Effect on Water Operations and Management*
Columbia – Temple	14,000	None
Traver – Chino	2,562	None

Leaching is necessary in Columbia to manage soil salinity. It's estimated by Columbia management that as many as 1,000 acres may still be affected by soil salinity. Also, irrigation water salinity can result in accumulations of soluble salts in the soil profile if adequate leaching fractions are not employed. Maintaining a favorable salt balance is necessary to insure that soil salinity concentrations don't exceed crop salt tolerance levels. This practice is commonly and successfully used by Columbia landowners and soil salinity is not limiting crop yield. Given the moderately coarse texture of some Columbia soils, irrigation management has always been a key element for obtaining economic crop yields. During the past two decades, many of these coarser texture soils have been planted to permanent crops, primarily almonds. Micro-irrigation systems are widely used in Columbia, which has facilitated irrigation management and increased irrigation efficiency. The use of shorter gravity irrigation runs and tailwater return also has assisted in the management of these moderately coarse textured soils.

3. Agricultural limitations resulting from soil problems (Agricultural only)

Soil Problem	*Estimated Acres*	*Effect on Water Operations and Management*
Salinity	1,000	None
High-water table	N/A	None
High or low infiltration rates	N/A	None
Other (define)	N/A	None

D. Climate

1. General climate of the district service area

The climate in the vicinity of Columbia is characterized by cool winters and long, hot summers. Relative humidity levels of 15 percent are common during summertime afternoons and readings as low as 8 percent have been recorded. Relative humidity during the wintertime is much higher averaging about 90 percent during December and January mornings. July is the warmest month with an average maximum temperature of about 96 degrees F. Daytime summer temperatures frequently exceed 100 degrees F. Daytime winter temperatures average about 54 degrees F with nighttime lows averaging about 36 degrees F. Nighttime winter temperatures may fall below freezing as a result of infrequent cold spells. The length of the frost free growing season averages about 290 days. The prevailing wind direction is from northwest to southeast.

Central California weather conditions are influenced by the north pacific high pressure system. During the summertime atmospheric high pressure over the Pacific Ocean blocks moist air from coming onshore. This high pressure usually weakens during the wintertime. About 90 percent of the annual precipitation in Columbia falls during the 6-month period between November and April.

Columbia is located within CIMIS Climatic Zone 15, Northern and Southern San Joaquin Valley. Annual Reference Crop Evapotranspiration (ETo) is 57.9 inches.

	Jan,	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Avg. Precip. (1)	1.70	1.50	1.60	0.95	0.44	0.08	0.01	0.01	0.21	0.57	0.93	1.40	9.40
Avg. Temp (2)	45	50	54	60	67	75	81	79	72	62	52	45	62
Max Temp (2)	73	84	87	101	110	112	115	113	111	100	86	76	97
Min.Temp (2)	17	24	28	34	38	42	50	51	42	36	27	23	34
ETo (3)	1.24	2.24	3.72	5.70	7.44	8.10	8.68	7.75	5.70	4.03	2.10	1.24	57.9

Data Sources:
(1) Teles CIMIS Weather Station (Station #7) Firebaugh, January 1971 – December 2011.
(2) The Weather channel (http://www.weather.com/weather/wxclimatology/monthly/93640).
(3) CIMIS Climatic Zone #15.

2. Impact of microclimates on water management within the service area
Microclimatic zones that could affect cropping or water management in Columbia are not present.

E. Natural and Cultural Resources

1. Natural resource areas within the service area

Name	*Estimated Acres*	*Description*
None		

2. Description of district management of these resources in the past or present **N/A**

3. Recreational and/or cultural resources areas within the service area

Name	*Estimated Acres*	*Description*
None		

F. Operating Rules and Regulations

1. Operating rules and regulations
See Attachment C, District Rules and Regulations (water related)
The "Rules and Regulations for Columbia Canal Company Governing the Distribution and Use of Water" dated July 8, 1993.

2. Water allocation policy (Agricultural only)
See Attachment C, Rule 8, Page 6
Summary - Surface water is allocated based on the number of shares owned by each landowner. Each acre owned is equivalent to one owned share. Thus, there are 16,561.58 shares in Columbia. During a non-critical water year when 59,000 acre-feet of surface water is available, each share has an annual right to 3.56 acre-feet. During a critical water year, each share would have an annual water right to 2.71 acre-feet. Water delivery allocations are made each month based on the contractual amount available under the terms and conditions of the Exchange Contract, considering the amount of water available to Columbia from all sources. Columbia does not allow wasteful water use practices and water waste is prohibited under Rule 10 of the Operating Rules and Regulations.

On occasion, a water user may exceed his monthly allocation. Under that circumstance, Columbia may adjust future allocations to account for the excess amount delivered or the water user may pump groundwater from his well into the Columbia conveyance/distribution facilities to replace the water taken. Water users also are allowed to pump groundwater into Columbia conveyance/distribution facilities for use on other parcels owned within the Columbia boundary. Columbia does not allow transfer of groundwater outside the Columbia boundary.

3. Official and actual lead times necessary for water orders and shut-off (Agricultural only)
See Attachment C, Rule 7 Page 5
Summary – Rule 7, Application for Water, requires that water users apply for water at least 3-days in advance before water is wanted. From an operational perspective, Columbia allows water users to order water 24-hours in advance of any scheduled delivery. However, Columbia coordinates with water users to provide water deliveries with as little as 2 to 4 hours prior notice, if those deliveries can be made without affecting other water users and they facilitate operation of the system.

4. Policies regarding return flows (surface and subsurface drainage from farms) and outflow (Agricultural only)
See Attachment C, Rule 10, Page 7
Summary - Columbia does not allow waste, and spills from the water conveyance/distribution system and return flows to the San Joaquin River are not allowed. Water users often manage tailwater on-farm by reusing those flows through their own tailwater return facilities. Columbia also collects tailwater flows and returns those waters to the conveyance/distribution system using several lift pump stations strategically located throughout the service area.

5. Policies on water transfers by the district and its customers
See Attachment D, Water Transfers Rules and Regulations
Summary – Columbia has a water transfer policy that allows water users to transfer irrigation water outside the Columbia boundary. The policy requires that land be fallowed and only the consumptive use amount from that fallowed land can be transferred, which can not exceed the surface water allocation for the year the transfer occurs. The transferor must submit an application to the Columbia Board for approval that meets the requirements of the rules and regulations. To date the Board has not received any such application and water has not been transferred outside Columbia.

See Attachment E, San Joaquin River Exchange Contractors Water Authority Water Transfer Policy
Summary – Columbia may transfer water to other districts to the extent that such water is available. The water subject to transfer is the amount that has been developed by the various water conservation activities supported/funded by Columbia, which include conversion to micro-irrigation systems and canal lining. The water is marketed by the Exchange Contractors Water Authority under the provisions of the CVPIA and the funds are used by Columbia for future water conservation related activities. During 2011, Columbia transferred 5,616 acre-feet under this policy.

G. Water Measurement, Pricing, and Billing

1. Agricultural Customers

1. *Number of delivery points (turnouts and connections)* 240
2. *Number of delivery points serving more than one farm* 0
3. *Number of measured delivery points (meters and measurement devices)* 240
4. *Percentage of delivered water that was measured at a delivery point* 100%

5. Delivery point measurement device table (Agricultural only)

Measurement Type	*Number*	*Accuracy* (+/- %)*	*Reading Frequency (Days)*	*Calibration Frequency (Months)*	*Maintenance Frequency (Months)*
Orifices					
Propeller meter	82	2%	Daily	Begin Season	*
Weirs	35	4%	Daily		Off-season
Flumes					
Venturi					
Metered gates	123	4%	Daily	Begin Season	*
Acoustic doppler					
Other (Headgates)					
Total					

**If a ditch tender finds a meter that needs repair, it's repaired as soon as possible. All meters are inspected during the off-season and repairs are performed as required. Documentation verifying the accuracy of measurement devices is included in Attachment H.*

2. Urban Customers N/A

3. Agricultural and Urban Rates

a. Current year agricultural and /or urban water charges - including rate structures and billing frequency

The Columbia Board sets the water rate for the following year at their December meeting. Share holders are notified of the water rate decision via US mail. The 2012 water rate is $50.00 per share, or about $17.50 per acre-foot assuming non-critical year hydrologic conditions. Water users are invoiced quarterly, and in 2012 will receive 4 invoices for $12.50 per share, each. Columbia does not charge a tiered water rate. Should a shareholder exceed his water entitlement, that shareholder is required to replace that water by pumping groundwater into the Columbia system.

b. Annual charges collected from agricultural customers

Fixed Charges			
Charges ($ unit)	*Charge units $/acre, etc.*	*Units billed during year acres, etc.*	*$ collected ($ times units)*
$50.00	$/acre	16,561.58	$828,079

Volumetric charges			
Charges ($ unit)	*Charge units $/AF, etc.*	*Units billed during year AF, etc.*	*$ collected ($ times units)*
N/A			

See Attachment F, Columbia Sample Bill

c. Describe the contractor's record management system

Ditch tenders visit each meter daily to collect meter reading data. Water deliveries are recorded daily by acre-feet delivered using meters at the head-works, main delivery points and field turnouts. Individual water user charts are kept using a computer spreadsheet to track daily water deliveries. These individual water user charts are used to insure that each water user receives an equal water share based on the allocation of available water resources.

H. Water Shortage Allocation Policies

1. Current year water shortage policies or shortage response plan - specifying how reduced water supplies are allocated

See Attachment C, Allocation of Water, Rule 8, Page 6

In the event of anticipated or actual water shortages, Columbia prorates the available water supply among the water users with each acre receiving an equal share. Columbia may reduce the length of run time, the amount of water delivered during each run and the amount of water delivered during the shortage period.

2. Current year policies that address wasteful use of water and enforcement methods

See Attachment C, Waste of Water, Rule 10, Page 7

See Attachment C, Penalty for Non-Compliance, Rule 20, Page 12

Columbia policies allow the District to suspend water service to a water user should water waste occur in violation of Columbia rules.

I. Evaluate Policies of Regulatory Agencies Affecting the Contractor and Identify Policies that Inhibit Good Water Management.

Columbia has an efficient water delivery system and continues to improve their facilities to conserve irrigation water. There are several regulatory agencies, such as the Bureau of Reclamation, Department of Water Resources and State Water Quality Control Board whose policies have the potential to affect Columbia's water management decisions. However, at present there are not any regulatory agency policies that inhibit Columbia's water management.

Section II: Inventory of Water Resources

A. Surface Water Supply

1. Surface water supplies in acre feet, imported and originating within the service area, by month (Table 1).

The agricultural tables are included in Section 5, Water Inventory Tables. Total surface deliveries to Columbia during 2011 were 59,000 acre-feet (See Chapter 5, Table 1).

2. Amount of water delivered to the district by each of the district sources for the last 10 years

See Section 5, Water Inventory Tables, Table 8.

B. Groundwater Supply

1. Groundwater extracted by the district and delivered, by month (Table 2)

See Chapter 5, Water Inventory Tables, Table 2

Columbia does not own or operated groundwater wells.

6. Groundwater basin(s) that underlies the service area

Columbia is at the western extent of the Madera Groundwater Basin. The Madera Groundwater Basin boundary covers Madera County from the San Joaquin River on the south and west, the Chowchilla Groundwater Basin on the north (Merced County), and bedrock of the Sierra Nevada foothills on the east. There is a cone of depression in the central part of the basin caused by groundwater pumping for irrigation in areas where surface water is not available. Groundwater flow is generally to the southwest in the eastern part of the basin and to the northwest away from the recharge area along the San Joaquin River in the south. The lacustrine and marsh deposits that contain the E-clay underlie the western part of the basin at a depth ranging from about 150 to 300 feet deep. The E-clay is relatively impermeable and restricts the vertical movement of water dividing the water bearing deposits into unconfined and confined aquifers. Most pumping in the basin is above the E-clay. The storage capacity of the basin is estimated at about 18,500,000 acre-feet to a depth of 300 feet and 40,900,000 acre-feet to the base of the fresh water aquifer. The basin safe yield has not been determined and the basin is considered to be in a state of long-term overdraft.

Name	*Size (Square Miles)*	*Usable Capacity (AF)*	*Safe Yield (AF/Y)*
Madera Groundwater Basin	614	18,500,000	Not Determined

Source: California Department of Water Resources, Groundwater Bulletin 118, February 2004.

3. Map of district-operated wells and managed groundwater recharge areas

See Attachment A, for District Facilities Map

Columbia does not own or operate groundwater wells. Columbia began constructing two groundwater recharge basins during 2008. These two basins encompass 122 acres with a capacity of about 730 acre-feet. These basins are shown as fields 7101 and 7103 on the map included in Attachment A. Groundwater recharge is by surface percolation. These groundwater recharge basins are used during periods when flood flows are available. Water coming into the recharge basins is not metered. These basins were not used during 2011.

4. Description of conjunctive use of surface and groundwater
The groundwater basin is recharged in part by seepage from the canal system. Groundwater is pumped by water user owned wells, which provide irrigation water for peaking, to supplement surface water, and balance flow.

5. Groundwater Management Plan
Columbia has prepared a 3030 Groundwater Management Plan through the San Joaquin River Exchange Contractors Water Authority (Updated 3030 Groundwater Management Plan, Adopted April 4, 2008), which is included as Attachment G.

6. Groundwater Banking Plan
Columbia does not have a Groundwater Banking Plan.

C. Other Water Supplies

1. "Other" water used as part of the water supply – Describe supply
See Section V, Water Inventory Tables, Table 1
Columbia does not have a source of water other than surface water provided under the terms and conditions of the Exchange Contract. Columbia does not own groundwater wells and all groundwater pumping within the Columbia boundary is by the share holders. Columbia does have 2 small groundwater recharge basins that are used periodically for groundwater recharge purposes.

D. Source Water Quality Monitoring Practices

1. Potable Water Quality (Urban only) N/A

2. Agricultural water quality concerns: *Yes* XXX *No* _____
(If yes, describe)
Columbia surface water quality is well suited for the production of the range of crops produced; however, surface water salinity can be elevated at times because of delta operational issues. Also, the Delta-Mendota Canal is periodically used to wheel non-project water (groundwater) under Warren Act Contracts. This wheeled water is often of poor quality, which can increase the salt concentration of the Mendota Pool. Also, the Mendota Pool Agreement with the Mendota Pool pumpers results in increased salinity that occurs from discharging groundwater to the Mendota Pool. Irrigation tailwater can increase the salinity of water in the Columbia conveyance/distribution facilities.

3. Description of the agricultural water quality testing program and the role of each participant, including the district, in the program
The BOR maintains a continuous strip chart recorder that monitors the electrical conductivity of water deliveries from the Mendota Pool. Columbia staff collects monthly water samples from six locations in the conveyance/delivery system that are submitted to a local laboratory for analysis. Columbia staff also take periodic readings using portable electrical conductivity meters.

4. *Current water quality monitoring programs for surface water by source (Agricultural only)*

Analyses Performed	*Frequency*	*Concentration Range*	*Average*
Total Dissolved Solids	Continuous	200 - 500	350
Ag Suitability	Monthly - ECw	200 – 1,200	350

Columbia collects groundwater samples from share holder owned wells during the summertime. These water samples are submitted to a local agricultural laboratory for analysis of agricultural suitability.

Current water quality monitoring programs for groundwater by source (Agricultural only)

Analyses Performed	*Frequency*	*Concentration Range*	*Average*
Ag Suitability	Annually	300 – 1,400 TDS	500 TDS

E. Water Uses within the District

1. Agricultural
See Section V, Water Inventory Tables, Table 5 - Crop Water Needs
Estimated net crop water demand during 2011 was 42,093 acre-feet.

2. Types of irrigation systems used for each crop in current year

Crop name	*Total Acres*	*Level Basin - acres*	*Furrow - acres*	*Sprinkler – acres*	*Low Volume - acres*	*Multiple methods - acres*
Alfalfa	1,817	1,817				
Corn	582		582			
Corn, Silage	400		400			
Cotton	443		443			
Pasture	390	390				
Wheat	212	212				
Almonds	8,915				8,915	
Pistachio	210				210	
Pomegranate	2,224				2,224	
Other	210		210			
TOTAL		2,419	1,635		11.349	

3. *Urban use by customer type in current year*
N/A

4. Urban Wastewater Collection/Treatment Systems serving the service area
N/A

5. Groundwater recharge in current year (Table 6)

Recharge Area	*Method of Recharge*	*AF*	*Method of Retrieval*
Columbia Basins	Percolation	0 AF during 2011	Water User Wells
	Total	0	

*6a. Transfers and exchanges **into** the service area in current year – (Table 1)*

From Whom	*To Whom*	*AF*	*Use*
None			
	Total		

*6b. Transfers and exchanges **out** of the service area in current year – (Table 6)*

From Whom	*To Whom*	*AF*	*Use*
Columbia	San Joaquin River Exchange	5,616	Irrigation
	Contractors Water Authority		
	Total	5,616	

7. Wheeling, or other transactions in and out of the district boundaries – (Table 6)

From Whom	*To Whom*	*AF*	*Use*
None			
	Total		

8. Other uses of water

Other Uses	*AF*
None	

F. Outflow from the District (Agricultural only)

Columbia operates the conveyance/distribution facility as a closed system and does not allow outflow/discharge. Irrigation tail water is managed on-farm or discharged to Columbia facilities. Columbia operates lift pumps that recirculate water for diversion at farm headgates.

1. Surface and subsurface drain/outflow:
N/A, Columbia does not allow outflow.

2. Description of the Outflow (surface and subsurface) water quality testing program and the role of each participant in the program
N/A

3. Outflow (surface drainage & spill) Quality Testing Program
N/A

4. Provide a brief discussion of the District's involvement in Central Valley Regional Water Quality Control Board programs or requirements for remediating or monitoring any contaminants that would significantly degrade water quality in the receiving surface waters.

N/A, Columbia operates the water conveyance/distribution facilities as a closed system and does not allow outflow. Columbia and its share holders are members of the Westside Regional Water Coalition. Water quality coalitions have been formed throughout the Central Valley in response to Conditional Waiver of Waste Discharge Requirements passed on July 11, 2003 by the Central Valley Regional Water Quality Control Board. Viewed by many as the most economical way to comply with the regulations, the coalitions' goal is to represent farmers with irrigated cropland within a regional watershed so they don't need to file individual reports with the Regional Board. On April 1, 2004, the coalition submitted a watershed use report describing detailed cropping patterns, pesticides and nutrient

use and a compilation of management practices that can protect water quality from farm inputs. Also submitted was the water monitoring plan for the watershed drainage area. Beginning on July 1, 2004, the coalition initiated monthly water monitoring. All acreage within Columbia is enrolled to comply with the agricultural waiver requirements.

Districts included in the drainage problem area, as identified in "A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley (September 1990)," should also complete Water Inventory Table 7 and Addendum C (include in plan as Attachment J)

G. Water Accounting (Inventory)

Tables 1 through 8 are included in Section V.

Section III: Best Management Practices (BMPs) for Agricultural Contractors

A. Critical Agricultural BMPs

1. *Measure the volume of water delivered by the district to each turnout with devices that are operated and maintained to a reasonable degree of accuracy, under most conditions, to +/- 6%*

Number of turnouts that are unmeasured or do not meet the standards listed above: 0

# of measurement devices installed last year at previously unmeasured turnouts: 0

# of measurement devices installed this year at previously unmeasured turnouts: 0

# of measurement devices to be installed next year at previously unmeasured turnouts: 0

Types of Measurement Devices Being Installed	*Accuracy*
N/A	N/A

2. *Designate a water conservation coordinator to develop and implement the Plan and develop progress reports*

Name: Randy Houk *Title:* General Manager

Address: *6770 Avenue 7 ½, Firebaugh, CA 93622*

Telephone: 559-659-2425 *E-mail:* rghccc@sbcglobal.net

Columbia does not have a job description for this position and water conservation activities are managed by the Columbia General Manager.

3. *Provide or support the availability of water management services to water users*

a. On-Farm Evaluations

On-farm irrigation and surface drainage system evaluations using mobile lab type assessments from Cal Poly is used within Columbia on an annual basis or as requested by individual water users. Columbia supports Mobile Lab evaluations. These are available throughout the area with services provided by private consultants. Water users are free to select one of these consultants based on their individual preference. Columbia, upon receiving a request, assists water users in selecting a consultant who provides such services. Columbia suggests that at least 10 percent of a water users field be evaluated annually. Columbia continues to notify water users of the availability of mobile lab services in the area.

1) On farm irrigation and drainage system evaluations using a mobile lab type assessment

	Total in district	*# surveyed last year*	*# surveyed in current year*	*# projected for next year*	*# projected 2nd yr in future*
Irrigated acres	15,403	500	500	500	500
Number of farms	25	5	5	5	5

2) Timely field and crop-specific water delivery information to the water user

CIMIS Station #7 at Telles Ranch is near Columbia. This on-line information can be assessed daily by water users. Information is generally used by water users who have outside consultants making recommendations on water irrigation events and soil moisture levels. Columbia supports this activity and assists water users with obtaining the information from CIMIS. Local newspapers and radio stations also report daily ET information for area agriculture.

b. Real-time and normal irrigation scheduling and crop ET information

Water users generally record and analyze their individual irrigation events. Total irrigation event volumes also are recorded by the ditch tenders and then submitted to the Columbia office for billing purposes. These irrigation application totals are available to each water user upon request. Year-end and monthly summary reports, available to water users, show total water user account use by turnout.

c. Surface, ground, and drainage water quantity and quality data provided to water users

Columbia has water quality test results for surface water. Those data are available to water users upon request at the Columbia office.

d. Agricultural water management educational programs and materials for farmers, staff, and the public

Program	*Co-Funders (If Any)*	*Yearly Targets*
Newsletters	Exchange Contractors	All Water Users
Field Days/Seminars	Cal Poly	All Water Users
Conservation Connection	BOR	All Water Users
Irrigation Training and Research Center	Cal Poly	All Water Users
Center For Irrigation Technology	Cal State Fresno	All Water Users

See Attachment I for samples of provided materials and notices

e. other

None

4. Pricing structure - based at least in part on quantity delivered

Adopt a water pricing structure based on the measured quantity delivered

Columbia was formed to deliver water from the San Joaquin River to the land that held riparian or appropriative right to these flows. These landowner water rights are appurtenant to the land and are held in trust by Columbia. Columbia is a non-profit mutual water company formed as a corporation under California law. Given the nature of the riparian water rights and allocation of water using the water share approach, Columbia does not have the right to charge a tiered water rate for surface water delivered under the BOR contract. Columbia could charge a higher or tiered rate for groundwater, if under future conditions groundwater pumped by Columbia became a part of the total water supply. All groundwater pumping within the Columbia service area is by private wells owned by share holders.

Water users pump groundwater to supplement surface water provided by Columbia, since the surface water supply does not meet crop water demand. The cost of pumping varies considerably across Columbia ranging from about $40.00 to $80.00 per acre-foot for the cost of power. Considering the additional cost associated with operation and maintenance along with capital costs, groundwater is an expensive alternative to Columbia surface water. The cost differential between Columbia surface water

and water user pumped groundwater provides a significant incentive for water users to efficiently use Columbia surface water supplies. The cost of groundwater pumping paid by water users is in essence the second tier water rate in the Columbia service area.

5. Evaluate and improve efficiencies of district pumps
Describe the program to evaluate and improve the efficiencies of the contractor's pumps.

Columbia contracts with a local pump company to provide annual pump and motor maintenance, and repair services. The local company also provides emergency services as required. PG&E pump tests are also scheduled and performed to evaluate pump efficiency along with commercial pump testing for share holder owner wells.

	Total in district	*# surveyed last year*	*# surveyed in current year*	*# projected for next year*
Wells	0	0	0	0
Lift pumps	8	8	8	8

B. Exemptible BMPs for Agricultural Contractors

(See Planner, Chapter 2, Addendum B for examples of exemptible conditions)

1. Facilitate alternative land use

Drainage Characteristic	*Acreage*	*Potential Alternate Uses*
High water table (<5 feet)	**N/A**	
Poor drainage	**N/A**	
Groundwater Selenium concentration > 50 ppb	**N/A**	
Poor productivity	**N/A**	

2. Facilitate use of available recycled urban wastewater
NA

3. Facilitate the financing of capital improvements for on-farm irrigation systems

Program	*Description*
Water Conservation Grant Program	Annual Water User Grant Funding

Columbia has a Water Conservation Grant Policy renewed annually by the Columbia Board. Shareholders are encouraged to participate in Columbia programs by personal communication with Columbia staff. The purpose of this program is to encourage Columbia water users to implement water conservation measures such as:

- Converting to permanent approved water conservation irrigation systems
- Approved tailwater return systems
- Approved underground pipe systems
- Approved concrete lined ditches
- Approved land leveling for conservation
- Repair and maintenance of existing water conservation measures.

The funding amount for 2012 is $1 million and maximum grant amounts for any one share holder is $100,000.

4. Incentive pricing

Describe incentive rate structure and purpose.

Columbia does not have and incentive rate structure. Crop water demand is met with the current surface water supply supplemented by groundwater pumped from share holder owned wells during high demand periods. Columbia has determined that the appropriate use of available water supplies has and is being practiced by all District water users.

5. a) Line or pipe ditches and canals

Columbia has lined about 28.5 miles of the canal system, which includes the work completed during 2012. Additional canal lining is planned for 2013 and 2014. During 2013, Columbia plans to line about 3.6 miles (1.5 miles membrane and 2.1 miles concrete). During 2014, Columbia plans to line 2.5 miles using membrane material. Future Columbia canal lining activities are contingent on funding availability and construction conditions.

Canal	Lined Length (ft)		Total Lined Length		Construction Status
	Concrete	Membrane	Feet	Miles	
7B Ditch	8,838	0	8,838	1.67	Complete
8A Ditch	4,784	0	4,784	0.91	Complete
Columbia Main	9,504	39,600	49,104	9.30	Complete
Mowry	2,385	0	2,385	0.45	Complete
Ridge Main	0	41,495	41,495	7.86	Complete
River Ditch	14,032	0	14,032	2.66	Complete
Road Ditch	9,846	0	9,846	1.86	Complete
Sausilito	14,159	0	14,159	2.68	Complete
Stoddard	5,900	0	5,900	1.12	Complete
Total	69,448	81,095	150,543	28.51	

The canal lining effort conserves about 8,800 acre-feet annually that would have contributed to seepage losses. This conservation effort has significantly increased the efficiency of the canal conveyance/ distribution facilities and reduced the need for shareholders to pump supplemental groundwater.

b) Construct/line regulatory reservoirs

Reservoir Name	*Location*	*Describe improved operational flexibility and AF savings*
None anticipated		

6. Increase flexibility in water ordering by, and delivery to, water users

Water users contact ditch tenders directly or call water orders in to the Columbia office. The Columbia office maintains a 24-hour per day water order system. Columbia staff work with water users to facilitate flexibility with water orders if the requests are reasonable and the requested water order does not disrupt other water deliveries to any other water user served by the affected canal/lateral.

6. Construct and operate district spill and tailwater recovery systems

Columbia operates as a closed system and does not allow discharges/spills from the canal facilities. Additional facilities are not required.

Distribution System Lateral	*Annual Spill (AF/Y)*	*Quantity Recovered and reused (AF/Y)*
N/A		
Total		

Drainage System Lateral	*Annual Drainage Outflow (AF/Y)*	*Quantity Recovered and reused (AF/Y)*
Buttonwillow lateral and associated drainage ditches	0	3,800
Mowry lateral	0	200
Total	0	4,000

Describe facilities that resulted in reduced spill and tailwater
The Buttonwillow lateral is used to collect tailwater flows in Madera County. There are 7 relift pumps associated with the Buttonwillow lateral as follows:

- Cardella Relift – Pumps 15, 16 and 17
- Lehman Relift – Pumps 18, 19 and 20
- Houk Relift, Pump 21

The Mowry relift pump (pump 1) is used to recirculate tailwater flow in Fresno County

8. *Plan to measure outflow.* ***N/A***

9. Optimize conjunctive use of surface and groundwater
Describe the potential for increasing conjunctive use of surface and groundwater.
The conjunctive use of surface and groundwater has been improved by the lining water delivery facilities. This has increased the efficiency of the delivery system, which reduces the need for groundwater pumping for peaking and supply reliability.

10. Automate distribution and/or drainage system structures
Identify locations where automation would increase delivery flexibility and reduce spill and losses. Describe program to achieve these benefits and estimate the annual water savings.
Columbia studied the potential alternatives for automating the delivery system including construction of a small regulating reservoir. The engineering analysis concluded that the cost to benefit ratio was not beneficial to Columbia.

11. Facilitate or promote water customer pump testing and evaluation
Columbia promotes the need to maintain share holder owned pumps and motors in good working order. Educational materials and mailers continuously remind water users of the value associated with annual maintenance. The high cost of energy associated with operating these pumps and motors provides a constant reminder to water users that efficient equipment benefits an operation by reducing operating costs. Local pump companies also make frequent calls on water users and provide educational materials promoting the value of timely pump testing, maintenance and repair. Columbia has records of grower pump tests conducted annually since 2000.

12. *Mapping*
Columbia retained the services of a local engineering company to update the GIS mapping of the district. That effort was completed during summer 2012 and will be available sometime during 2013.

GIS maps	*Estimated cost (in $1,000s)*				
	Year 1	*Year 2*	*Year 3*	*Year 5*	*Year 6*
Layer 1 – Distribution system	18,000				
Layer 2 – Drainage system	18,000				
Suggested layers:					
Layer 3 – Groundwater information	15,000				
Layer 4 – Soils map	NRCS				
Layer 5 – Natural & cultural resources	**N/A**				
Layer 6 – Problem areas	**N/A**				

C. Provide a 3-Year Budget for Implementing BMPs

1. Amount actually spent during current year.

Year 2012 or Year 1			*Actual Expenditure*	
BMP #		*BMP Name*	*(not including staff time)*	*Staff Hours*
A	*1*	*Measurement*	$0	0
	2	*Conservation staff*	$15,000	0
	3	*On-farm evaluation /water delivery info*	$22,000	0
		Irrigation Scheduling	$0	0
		Water quality	$0	0
		Agricultural Education Program	$0	0
	4	*Quantity pricing*	$0	0
	5	*Contractor's pumps*	$0	0
B	*1*	*Alternative land use*	$0	0
	2	*Urban recycled water use*	$0	0
	3	*Financing of on-farm improvements*	$390,000	0
	4	*Incentive pricing*	$0	0
	5	*Line or pipe canals/install reservoirs*	$1,900,000	0
	6	*Increase delivery flexibility*	$0	0
	7	*District spill/tailwater recovery systems*	$0	0
	8	*Measure outflow*	*$0*	0
	9	*Optimize conjunctive use*	$0	0
	10	*Automate canal structures*	$0	0
	11	*Customer pump testing*	$2,000	0
	12	*Mapping*	$51,000	0
		Total	$2,380,000	0

2. Projected budget summary for the next year.

Year 2013 or Year 2			*Budgeted Expenditure*	
BMP #		*BMP Name*	*(not including staff time)*	*Staff Hours*
A	*1*	*Measurement*	$0	0
	2	*Conservation staff*	$17,000	0
	3	*On-farm evaluations/water delivery info*	$25,000	0

		Irrigation Scheduling	$0	0
		Water quality	$0	0
		Agricultural Education Program	$0	0
	4	*Quantity pricing*	$0	0
	5	*Contractor's pumps*	$0	0
B	1	*Alternative land use*	$0	0
	2	*Urban recycled water use*	$0	0
	3	*Financing of on-farm improvements*	$250,000	0
	4	*Incentive pricing*	$0	0
	5	*Line or pipe canals/install reservoirs*	$1,600,000	0
	6	*Increase delivery flexibility*	$0	0
	7	*District spill/tailwater recovery systems*	$0	0
	8	*Measure outflow*	$0	0
	9	*Optimize conjunctive use*	$0	0
	10	*Automate canal structures*	$0	0
	11	*Customer pump testing*	$2,000	0
	12	*Mapping*	$0	0
		Total	$1,894,000	0

3. *Projected budget summary for 3rd year.*

Year 2014 or Year 3

BMP #		*BMP Name*	*Budgeted Expenditure (not including staff time)*	*Staff Hours*
A	1	*Measurement*	$0	0
	2	*Conservation staff*	$20,000	0
	3	*On-farm evaluations/water delivery info*	$27,000	0
		Irrigation Scheduling	$0	0
		Water quality	$0	0
		Agricultural Education Program	$0	0
	4	*Quantity pricing*	$0	0
	5	*Contractor's pumps*	$0	0
B	1	*Alternative land use*	$0	0
	2	*Urban recycled water use*	$0	0
	3	*Financing of on-farm improvements*	$250,000	0
	4	*Incentive pricing*	$0	0
	5	*Line or pipe canals/install reservoirs*	$1,000,000	0
	6	*Increase delivery flexibility*	$0	0
	7	*District spill/tailwater recovery systems*	$0	0
	8	*Measure outflow*	$0	0
	9	*Optimize conjunctive use*	$0	0
	10	*Automate canal structures*	$0	0
	11	*Customer pump testing*	$2,700	0
	12	*Mapping*	$0	0
		Total	$1,299,700	0

Section IV: Best Management Practices for Urban Contractors

A. Urban BMPs N/A

Section V: District Water Inventory Tables

This Section includes the 2011 water inventory tables for Columbia as follows:

- Table 1 Surface Water Supply
- Table 2 Groundwater Pumping
- Table 3 Total Water Supply
- Table 4 Agricultural Distribution System
- Table 5 Crop Water Needs
- Table 6 2011 District Water Inventory
- Table 7 Influence on Groundwater and Saline Sink
- Table 8 Annual Water Quantities Delivered Under Each Right or Contract

Year of Data | 2011 | Enter data year here

0

Table 1

Surface Water Supply

2011 Month	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (define) (acre-feet)	Other Water (define) (acre-feet)	Transfers into District (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
Method								
January	0	0	0	0	0	0	0	0
February	3650	0	0	0	0	0	0	3,650
March	5650	0	0	0	0	0	0	5,650
April	7700	0	0	0	0	0	0	7,700
May	7800	0	0	0	0	0	0	7,800
June	9200	0	0	0	0	0	0	9,200
July	9000	0	0	0	0	0	0	9,000
August	7000	0	0	0	0	0	0	7,000
September	5000	0	0	0	0	0	0	5,000
October	4000	0	0	0	0	0	0	4,000
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
TOTAL	59,000	0	0	0	0	0	0	59,000

Table 2

Groundwater Pumping

2011 Month	District Groundwate (acre-feet)	Private Agric *(acre-feet)
Method		
January	0	0
February	0	0
March	0	0
April	0	0
May	0	61
June	0	122
July	0	1,125
August	0	514
September	0	122
October	0	0
November	0	0
December	0	0
TOTAL	0	1,944

*normally estimated

Table 3

Total Water Supply

2011 Month	Surface Water Total (acre-feet)	District Groundwate (acre-feet)	Recycled M&I (acre-feet)	Total District (acre-feet)
Method				
January	0	0	0	0
February	3,650	0	0	3,650
March	5,650	0	0	5,650
April	7,700	0	0	7,700
May	7,800	0	0	7,800
June	9,200	0	0	9,200
July	9,000	0	0	9,000
August	7,000	0	0	7,000
September	5,000	0	0	5,000
October	4,000	0	0	4,000
November	0	0	0	0
December	0	0	0	0
TOTAL	59,000	0	0	59,000

*Recycled M&I Wastewater is treated urban wastewater that is used for agriculture.

2011 Precipitation Worksheet					2011 Evaporation Worksheet				
	inches precip	ft precip	acres	AF/Year		inches evap	ft evap	acres	AF/YEAR
Jan	0.85	0.07	141.70	10.04	**Jan**	0.85	0.07	141.70	10.04
Feb	1.43	0.12	141.70	16.89	**Feb**	2.30	0.19	141.70	27.16
Mar	2.04	0.17	141.70	24.09	**Mar**	4.20	0.35	141.70	49.59
Apr	0.27	0.02	141.70	3.19	**Apr**	5.90	0.49	141.70	69.67
May	0.01	0.00	141.70	0.12	**May**	8.30	0.69	141.70	98.01
Jun	0.80	0.07	141.70	9.45	**Jun**	9.60	0.80	141.70	113.36
Jul	0.00	0.00	141.70	0.00	**Jul**	10.00	0.83	141.70	118.08
Aug	0.00	0.00	141.70	0.00	**Aug**	8.50	0.71	141.70	100.37
Sept	0.00	0.00	141.70	0.00	**Sept**	6.30	0.53	141.70	74.39
Oct	0.44	0.04	141.70	5.20	**Oct**	4.40	0.37	141.70	51.96
Nov	0.74	0.06	141.70	8.74	**Nov**	0.74	0.06	141.70	8.74
Dec	0.07	0.01	141.70	0.83	**Dec**	0.07	0.01	141.70	0.83
TOTAL	**6.65**	**0.55**		**78.52**	**TOTAL**	**61.16**	**5.10**		**722.19**

Note: The total canal surface area in Columbia is 141.70 acres.

Table 4

Agricultural Distribution System

2011 Canal, Pipeline, Lateral, Reservoir	Length (feet)	Width (feet)	Surface Area (square feet)	Precipitation (acre-feet)	Evaporation (acre-feet)	Spillage (acre-feet)	Seepage (acre-feet)	Total (acre-feet)
7B Ditch	8,838	21	185,598	2.4	21.7	0	0	(19)
8A Ditch	4,784	17	81,328	1.0	9.5	0	0	(8)
B & B #1	2,150	18	38,700	0.5	4.5	0	0	(4)
B & B #2	4,467	14	62,538	0.8	7.3	0	0	(7)
Columbia Main	113,415	31	3,515,865	44.7	411.4	0	0	(367)
Mowry	2,385	20	47,700	0.6	5.6	0	0	(5)
Ridge Main	41,495	32	1,327,840	16.9	155.4	0	0	(138)
River Ditch	14,032	7	98,224	1.2	11.5	0	0	(10)
Road Ditch	9,846	9	88,614	1.1	10.4	0	0	(9)
Sausalito	14,159	22	311,498	4.0	36.4	0	0	(32)
Stoddard	5,900	19	112,100	1.4	13.1	0	0	(12)
Misc. Distribution	100,800	3	302,400	3.8	35.4	0	0	(32)
TOTAL			6,172,405	78.5	722.2	0	8,566	(9,210)

Table 5

Crop Water Needs

2011 Crop Name	Area (crop acres)	Crop ET (AF/Ac)	Leaching Requiremen (AF/Ac)	Cultural Practices (AF/Ac)	Effective Precipitation (AF/Ac)	Appl. Crop Water Use (acre-feet)
Alfalfa	1,817	3.80	0.0	0.0	0.2	6,541
Corn	582	2.00	0.0	0.0	0.0	886
Corn Silage	400	2.00	0.0	0.0	0.0	800
Cotton	443	2.20	0.0	0.0	0.1	930
Pasture	390	4.00	0.0	0.0	0.2	1,482
Vegetables	36	1.30	0.0	0.0	0.0	47
Wheat	212	1.50	0.0	0.0	0.2	276
Almonds	8,915	2.80	0.0	0.0	0.1	24,071
Pistachios	210	3.00	0.0	0.0	0.1	609
Pomegranates	2,224	3.00	0.0	0.0	0.1	6,450
Nursery (trees)	1	2.00	0.0	0.0	0.0	2
Fallow	173	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
Crop Acres	15,403					42,093

Total Irrig. Acres 15,403 (If this number is larger than your known total, it may be due to double cropping)

Table 6

2011 District Water Inventory

Water Supply		Table 3		59,000
Riparian ET		(Distribution and Drain)	minus	0
Groundwater recharge		intentional - ponds, injection	minus	0
Seepage		Table 4	minus	8,566
Evaporation - Precipitation		Table 4	minus	644
Spillage		Table 4	minus	0
Transfers out of District			minus	5,616
Water Available for sale to customers				44,174
Actual Agricultural Water Sales	2011	From District Sales Records		44,174
Private Groundwater		Table 2	plus	1,944
Crop Water Needs		Table 5	minus	42,093
Drainwater outflow		(tail and tile, not recycled)	minus	0
Percolation from Agricultural Land		(calculated)		4,025
Unaccounted for Water		(calculated)		0

Table 7

Influence on Groundwater and Saline Sink

2011

Agric Land Deep Perc + Seepage + Recharge - Groundwater Pumping = District Influence	12,591
Estimated actual change in ground water storage, including natural recharge)	0
Irrigated Acres (from Table 5)	15,403
Irrigated acres over a perched water table	0
Irrigated acres draining to a saline sink	0
Portion of percolation from agri seeping to a perched water table	0
Portion of percolation from agri seeping to a saline sink	0
Portion of On-Farm Drain water flowing to a perched water table/saline sink	0
Portion of Dist. Sys. seep/leaks/spills to perched water table/saline sink	0
Total (AF) flowing to a perched water table and saline sink	0

Table 8

Annual Water Quantities Delivered Under Each Right or Contract

Year	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (define) (acre-feet)	Other Water (define) (acre-feet)	Transfers into District (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
2002	59,000	0	0	0	0	0	0	59,000
2003	59,000	0	0	0	0	0	0	59,000
2004	59,000	0	0	0	0	0	0	59,000
2005	59,000	0	0	0	0	0	0	59,000
2006	59,000	0	0	0	0	0	0	59,000
2007	59,000	0	0	0	0	0	0	59,000
2008	59,000	0	0	0	0	0	0	59,000
2009	59,000	0	0	0	0	0	0	59,000
2010	59,000	0	0	0	0	0	0	59,000
2011	59,000	0	0	0	0	0	0	59,000
Total	590,000	0	0	0	0	0	0	590,000
Average	59,000	0	0	0	0	0	0	59,000

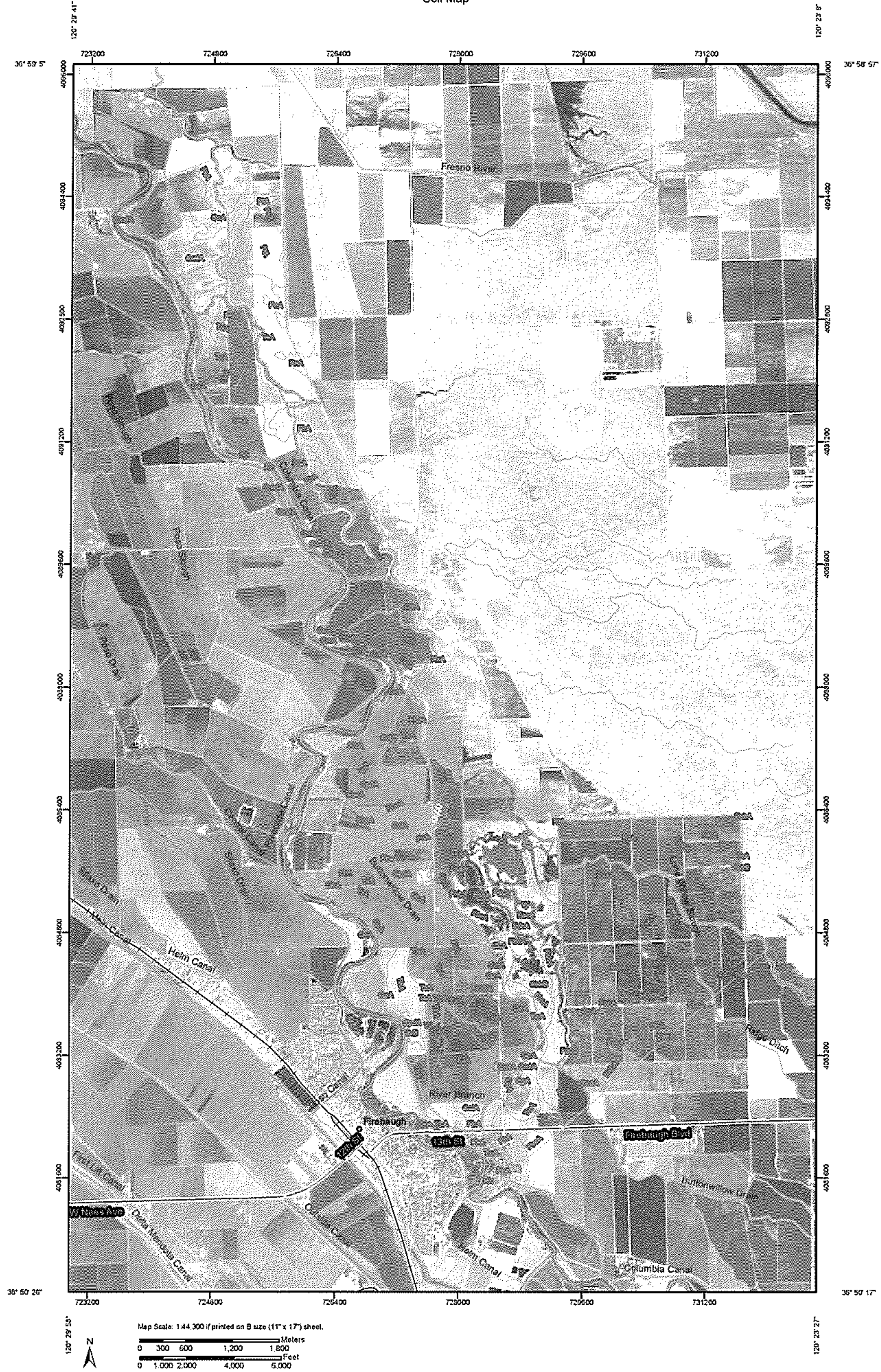
Attachment A

District Map

Attachment B

General Soils Map

Soil Map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120° 23' 9"
36° 59' 5"
36° 58' 57"
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726400
728000
729600
731200
Fresno River
Columbia Canal
Poso Slough
Poso Drain
Helm Canal
Main Canal
Firebaugh
River Branch
13th St
12th St
Firebaugh Blvd
Buttonwillow Drain
First Lift Canal
W Nees Ave
Delta Mendota Canal
Outside Canal
Columbia Canal
Helm Canal
Ridge Ditch
Lone Willow Slough
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36° 50' 17"
120° 29' 53"
120° 23' 27"
Map Scale: 1:44,300 if printed on B size (11" x 17") sheet.
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Feet
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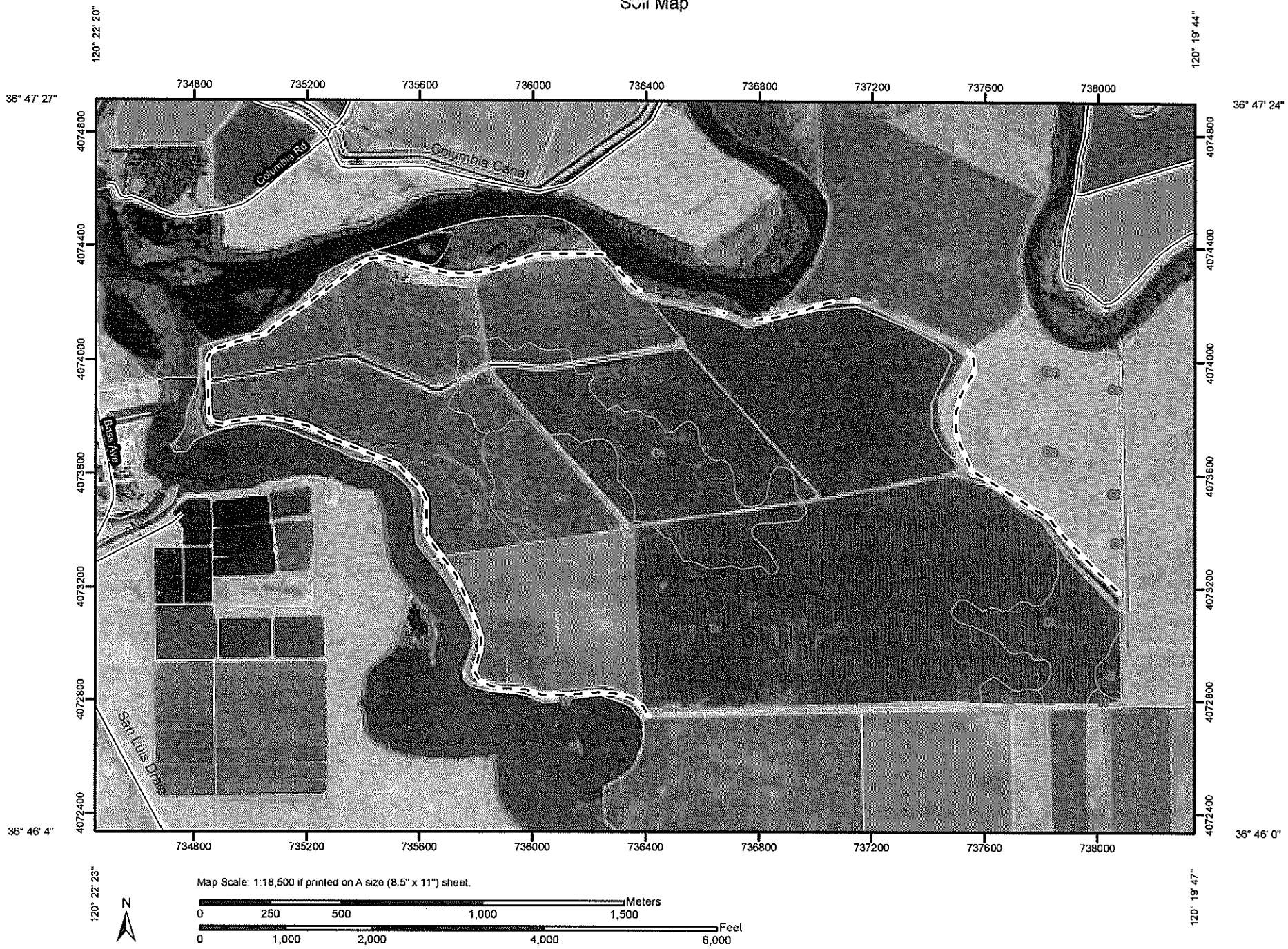
N

Custom Soil Resource Report
Soil Map

Soil Map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36° 47' 24"
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735600
736000
736400
736800
737200
737600
738000
4074800
4074400
4074000
4073600
4073200
4072800
4072400
Columbia Canal
Columbia Rd
Bass Ave
San Luis Drain
36° 46' 4"
36° 46' 0"
120° 22' 23"
120° 19' 47"
Map Scale: 1:18,500 if printed on A size (8.5" x 11") sheet.
N
Meters
0 250 500 1,000 1,500
Feet
0 1,000 2,000 4,000 6,000

Attachment C

Columbia Rules and Regulations

RULES AND REGULATIONS

OF

COLUMBIA CANAL COMPANY

Firebaugh, California

****

"A Mutual Water Company

Since 1926"

****

July 8, 1993

INDEX

RULES AND REGULATIONS

OF

COLUMBIA CANAL COMPANY

Governing the Distribution

and Use of Water

**ADOPTED BY THE BOARD OF DIRECTORS OF
THE COLUMBIA CANAL COMPANY
AT THE SPECIAL MEETING HELD ON APRIL 25, 1966**

The Columbia Canal Company, hereafter called Company, is a Corporation, organized and existing under and by virtue of the laws of the State of California. It is a Mutual Water Company governed by a Board of Directors elected by the Stockholders. It makes no profit and is operated for the sole benefit of the lands within its boundaries. The benefits the stockholders can derive from the COMPANY will be measured by the extent to which they cooperate to make it a success.

These rules and regulations are consistent with the laws of California and have been adopted by the Board of Directors pursuant to its Articles of Incorporation and By-Laws to effect orderly and efficient distribution and use of the COMPANY'S water supply; to effect adequate and uniform drainage to the lands within the boundaries of the COMPANY; to define the responsibilities of the stockholders in the use of the COMPANY'S right-of-way and/or other properties, and to govern the collection of the charges and expenses incident to the COMPANY'S business.

Rule 1

MANAGEMENT

The Manager shall have the general management of the business of the Company, subject, however, to the control of the Board of Directors and to the extent provided by the By-Laws.

The Manager shall employ such ditch tenders and other personnel as may be required and authorized by the Board of Directors for the operation, maintenance and improvement of the system.

Rule 2

CONTROL OF WORKS

All diversion works, canals, ditches, headgates, drains, syphons, tail water pipes, spillways and other structures belonging to the COMPANY will be operated and maintained by the COMPANY, and their control and operation will be under the exclusive control of the authorized agents of the COMPANY. The location, number and size of gates for the distribution of water from the COMPANY'S canals and the manner of delivery therefrom, so as to secure safe and efficient operation thereof, and the location, number and size of tail-water pipes for discharge of tailwater into the COMPANY'S drains shall be determined by the Manager of the COMPANY or his duly authorized representative, subject to the approval of the Board of Directors. In no event, however will the COMPANY provide and/or maintain turnouts and tail-water pipes at its expense in canals and drains that are not owned and/or controlled

by the COMPANY.

All "COMMUNITY" ditches and drains and appurtenant structures to which the COMPANY holds easements shall also be under the exclusive control of the authorized agents of the COMPANY to the same extent as if they were owned in fee. It is emphasized that the COMPANY will only maintain and operate such 'COMMUNITY' irrigation, drainage and seepage ditches whose rights-of-way easements have been granted and recorded.

Rule 3

TAMPERING AND DAMAGE TO COMPANY FACILITIES

Manipulation of COMPANY weirs, headgates and other structures is forbidden, unless permission is given by the ditch tender or other authorized employee of the COMPANY. Cutting canal or drain banks and/or placing dams or other obstructions in COMPANY canals or drains is prohibited.

Removal of dirts from, or other use, of COMPANY-owned property or easements such as the placing of toe ditches, drainage ditches, fences, trees, pumping plants, structures or other obstructions upon the COMPANY'S rights-of-way is also prohibited unless done with permission of the COMPANY.

Stockholders shall not permit their livestock to feed or trespass upon the rights-of-way of COMPANY canals, drains or "COMMUNITY" ditches except with specific permission of the COMPANY. In cases where it is necessary to cross the right-of-way or to

move livestock from one point to another along COMPANY rights-of-way, permission to use the rights-of-way for that purpose must be obtained from the Management in advance. Any damage done to canal or ditch banks by stockholders in using them for a roadway, whether moving livestock, farming equipment or other vehicles, shall be the responsibility of those making such use of the property. If it is found necessary for the COMPANY to repair such damage, those responsible therefor shall pay all costs of such repairs, and in addition thereto, shall reimburse the COMPANY for its cost of litigation in such eventuality.

Rule 4

LIABILITY FOR DAMAGE

The COMPANY will not raise water to an excessive height in canals or for carelessness of any stockholder in the use of water or for failure on his part to maintain any ditch or structure therein for which he is responsible -- either wholly or in part.

Rule 5

TRESPASS ON COMPANY PROPERTY

Any stockholder or any other individual entering upon COMPANY property does so at his own risk.

Rule 6

IRRIGATION OF EXCESSIVELY HIGH GROUND

The COMPANY will not raise water to an excessive height in canals or ditches in order to give service to lands or private ditches of unreasonable elevation

Upon request made to the Management, the COMPANY will set a reference point of grade which will be the maximum elevation of land which can be serviced by that particular COMPANY canal or ditch.

Rule 7

APPLICATION FOR WATER

The "AMENDED CONTRACT FOR EXCHANGE OF WATERS" states, among other things, "The Contracting Entities (Columbia Canal Company being one of the Entities) shall furnish through the Contracting Entities Watermaster, estimates of their aggregate delivery requirements, and their daily delivery schedules for each weekly period; which shall be submitted to the United States at least 48 hours prior to the beginning of the delivery period."

Since the delivery schedule herein above referred to pertains to water delivered into Mendota Pool and not into the COMPANY'S canal system, stockholders and/or their tenants shall be required to apply for water at least three days in advance to the date water is wanted. However, water will be delivered on request when made less than three days before the date water is wanted provided

water is available and deliveries can be made without interference with other users and without undue waste of water or undue manipulation of weirs and gates.

Rule 8

ALLOCATION OF WATER

The daily entitlement to water of each owner of the capital stock of this COMPANY shall be in the proportion that the stock owned by him bears to the total number of shares of stock issued and outstanding, and that any stockholder owning more than one parcel of land may use his full daily entitlement of water on such of said parcels as he may desire, subject to a like right, in all other stockholders, and provided that the canal or canals used in transporting said water have the necessary carrying capacity.

When the daily entitlement does not constitute a practicable head of water, allocations shall be on a per acre-foot per month basis in the proportion that the stock owned by him bears to the total number of shares of stock issued and outstanding. The monthly allocation in acre-feet shall be a pro rata share, based on stock ownership, of the total water available to the COMPANY from all sources, including water recovered from its drains and wells, during the particular month for which the allocation is made through the Exchange Contract. In case of a shortage of water the same shall be divided pro rata among the stockholders of this COMPANY to the extent of the authorized capital stock of said COMPANY.

The COMPANY reserves the right to suspend service during any period of time when it is necessary to take water out of the canals for cleaning or other maintenance, repair or reconstruction work required.

Rule 9

METHOD OF DELIVERY

Water will be delivered in turn within "Community" ditch areas beginning at the head thereof. Any stockholder not able to use water in his regular turn on any run may receive water upon the completion of the delivery in his "Community" ditch, provided no undue loss of water is involved and there is no interference with deliveries to other stockholders.

Heads applied for may be altered by the COMPANY when necessary.

Stockholders will be required to use water continuously day and night until irrigation is completed and without waste at any time.

Rule 10

WASTE OF WATER

Stockholders, wasting water, either willfully, carelessly or on account of defective or inadequate ditches or structures, or on account of inadequate preparation of land for irrigation, may be refused further service until such conditions are remedied.

Rule 11

POINT OF DELIVERY

All measurements and deliveries of water shall be made at the point where the stockholder's lateral or ditch connects with the canal or ditch owned or controlled by the COMPANY.

Rule 12

UNAUTHORIZED TAKING OF WATER

Person interfering with the regulation of water in canals or ditches of the COMPANY are liable to criminal prosecution. If any person takes water without permission of the authorized agents of the COMPANY, he shall not only be subject to criminal prosecution, but shall forfeit his right to water on the next rotation or regular run of water.

Rule 13

OWNERSHIP OF WATER

All water in COMPANY canals, drains or ditches, regardless of source, except privately owned well water being transported therein by permission of the COMPANY, is COMPANY water and is subject to diversion and use by the COMPANY for the benefit of its stockholders.

Rule 14

ACCESS TO LAND

The authorized agents or employees of the COMPANY shall have free access at all times to all lands irrigated from the COMPANY system for the purpose of examining the ditches, laterals or drains serving such lands and/or the flow of water therein, for the purpose of ascertaining the acreage of crops on lands irrigated or to be irrigated, or for any other COMPANY purpose.

Rule 15

NUISANCES

No material or substance of any nature, and particularly those that are or may become offensive to the senses or injurious to health or which do or may injuriously affect the quality of water, obstruct the flow of water, or result in the scattering of seeds or noxious weeds, plants or grasses, shall be placed or dumped in any ditch or on any right-of-way of the COMPANY, or be placed or left so as to roll, slide, flow, or be washed or blown into any ditch or on any right-of-way. Any violation of this rule will subject the offender to criminal prosecution. All employees of the COMPANY shall promptly report any violation of this rule, and the stockholders of the COMPANY are especially urged to cooperate in its enforcement.

Rule 16

STOCK WATER

The COMPANY shall not be required to furnish water for the exclusive purpose of watering stock.

Rule 17

COMPLAINTS OF STOCKHOLDERS

Complaints of any kind against the COMPANY or any of its personnel should be made in writing to the Management of the COMPANY promptly after the acts complained of have occurred. Stockholders and/or their tenants shall have the right to refer any complaints in writing or in person to the Board of Directors of the COMPANY.

Rule 18

CHARGES FOR OPERATION AND MAINTENANCE OF SYSTEM (PORTION OF ARTICLE X OF BY-LAWS)

(1) The cost of maintenance and/or operation of the irrigation and drainage systems controlled, owned, or to be owned, by this Corporation, as well as the cost of such betterments and/or extensions as may be necessary to provide an adequate and uniform distribution of water to all stockholders, and to provide adequate and uniform drainage to the lands within the boundaries of this Corporation, shall be borne by all the stockholders in the proportion that the number of acres of land owned by each of them bears to the total number of acres of land under this Corporation's

system. The obligation to pay said costs and/or charges shall run with and bind the land described in the stock certificates, and any charges made or assessments levied shall be and constitute a lien on said land.

(2) The Secretary, or such other person as may be designated by the President, shall at times to be fixed by the Board of Directors, collect from each stockholder any sums of money which may be due pursuant to the provisions of the foregoing paragraph, or at the discretion of the Board of Directors. Assessments may be levied in the manner provided by law, to cover or defray such items of expense as may be necessary or proper for this Corporation to incur.

(3) All service charges and/or bills rendered by this Corporation must be promptly paid, and any stockholder who fails for a period of thirty (30) days to pay any lawful charge and/or bills rendered by this Corporation after the same has been rendered or demanded, shall not be entitled to demand or receive water or service of any kind from this Corporation. If such charge or bill is not paid within one (1) year after the same has been rendered or demanded, such stockholder shall forfeit all right to receive or demand water or service from this Corporation, and said stock shall become Columbia Canal Company Treasury Stock. At the discretion of the Board of Directors, said stock may be reissued after all lawful charges and/or assessments have been paid on said stock.

Rule 19

LOST CERTIFICATES

Stockholders shall pay a service charge of $5.00 for transfer or replacement of one or more certificates of stock which may have been lost, stolen, destroyed or otherwise disappeared.

Rule 20

PENALTY FOR NON-COMPLIANCE

Refusal to comply with the requirements hereof, or transgression of any of the foregoing rules and regulations, or any interference with the discharge of the duties of any employee of the COMPANY, shall be sufficient cause for shutting off the water, and water will not again be furnished until full compliance has been made with all requirements hereof.

Rule 21

CHANGE IN RULES AND REGULATIONS

The Board of Directors reserves the right to change these Rules and Regulations my majority action of the Board at any regular or special meeting by adopting an appropriate resolution and spreading such resolution on the minutes of the COMPANY. Publication and dissemination of such changes by the printing of revised Rules and regulations will be limited to economically feasible intervals as determined by the Board.

There shall be maintained at the office of the COMPANY, however, a loose leaf master copy of these Rules and Regulations

including all changes made by the Board of Directors, which copy will be open to inspection at any time during office hours of the COMPANY.

SECTION 592 -- PENAL CODE OF THE STATE OF CALIFORNIA

"Every person who shall, without authority of the owner or managing agent, and with intent to defraud, take water from any canal, ditch, flume, or reservoir used for the purpose of holding or conveying water for manufacturing, agriculture, mining, irrigating or generation of power, or domestic use, or who shall without like authority, raise, lower, or otherwise disturb any gate or other apparatus thereof, used for the control or measurement of water, or who shall empty or place, or cause to be emptied or placed, into any such canal, ditch, flume or reservoir, any rubbish, filth or obstruction to the free flow of the water is guilty of a misdemeanor."

Attachment D

Columbia Water Transfer Rules and Regulations

Columbia Canal Company

Water Transfers

Rules and Regulations

July 8, 1993

Firebaugh, California

BOARD RESOLUTION

RESOLUTION OF THE BOARD OF DIRECTORS OF COLUMBIA CANAL COMPANY ADOPTING RULES AND REGULATIONS GOVERNING TRANSFERS OF WATER UNDER THE CENTRAL VALLEY PROJECT IMPROVEMENT ACT OF 1992 (P.L. 102-575)

WHEREAS, the United States Congress has enacted the Central Valley Project Improvement Act of 1992 (P.L. 102-575) ("the Act") which provides, among other things, for transfers of project water by water users within the Columbia Canal Company's service area; and

WHEREAS, the United States Bureau of Reclamation has promulgated "Interim Guidelines for Implementation of the Water Transfer Provisions of the Central Valley Project Improvement Act (Title XXXIV of Public Law 102-575)" ("the Guidelines") establishing procedures and criteria for processing such water transfers until formal regulations can be adopted; and

WHEREAS, the Act and the Guidelines impose certain duties upon the Columbia Canal Company including but not limited to the duty to determine whether a proposed transfer of project water will have an unreasonable impact on the water supply, operations or financial conditions of the Columbia Canal Company or its water users; and

WHEREAS, the Columbia Canal Company is authorized to make reasonable rules and regulations providing for the equitable, efficient and economic distribution of its water supply; and

WHEREAS, the Columbia Canal Company desires to establish uniform procedures under which such proposed transfers of water will be evaluated, processed and administered,

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of Columbia Canal Company as follows:

10. The said Board hereby adopts the "Rules and Regulations Governing Transfers of Water Under the Central Valley Project Improvement Act of 1992 (P.L. 102-575)" a true coy of which is attached to this Resolution.

11. Pursuant to Article 13 of said Rules and Regulations, the Board hereby adopts the form of "Indemnification and Fallowing Agreement" attached as Exhibit "B" to this Resolution; and

12. The Board authorizes and directs the manager to take such actions and measures as may be reasonably necessary and incidental to implement the Act, the Guidelines and the said Rules and Regulations.

Passed and adopted at a regular/special meeting of the Board of Directors of Columbia Canal Company on July 8, 1993 by the following votes:

AYES:	4
NOES:	0
ABSENT:	1
ABSTAINING:	0

President
Darrell Vincent, Columbia Canal Company

ATTEST:

Secretary
Keith Watkins, Columbia Canal Company

RULES AND REGULATIONS

COLUMBIA CANAL COMPANY

RULES AND REGULATIONS GOVERNING TRANSFERS OF WATER UNDER THE CENTRAL VALLEY PROJECT IMPROVEMENT ACT OF 1992
(PL 102-575)

In order to implement §3405 of the Central Valley Improvement Act of 1992 (PL 102-575), Columbia Canal Company ("Company") adopts the following rules and regulations governing transfers of Central Valley Project water by water users.

1. Company Approval: Insofar as these rules and regulations provide for Company approval of water transfer proposals, they shall mean:

a. First 20%. As to transfer proposals that do not involve more than twenty percent (20%) of the Company's water supply subject to contract with the USBR, the term "Company Approval" shall mean the Company's written findings and conclusions reported to the USBR as to whether the transfer proposal should be approved, or conditionally approved.

b. More than 20%. As to transfer proposals that involve more than 20% of the Company's water supply subject to contract with the USBR, the term "Company Approval" shall mean the Company's approval, or conditional approval, of such proposals.

2. Eligible Transferors: Only landowners may transfer Company water allocations. If a transfer is proposed by a person who is not the landowner, the written concurrence of the landowner must accompany the proposal.

3. Compliance with Laws and Regulations: Transfer proposals must comply with the provisions of the Central Valley Project Improvement Act and all applicable regulations and guidelines of the Secretary of the Interior. All transfer

proposals must also be consistent with State law, including but not limited to the provisions of the California Environmental Quality Act (CEQA).

4. Consumptive Use Limitation: Only water that would have been consumptively used (or irretrievably lost to beneficial use) during the term of the transfer may be transferred - not to exceed the transferor's allocation of project water. The Company reserves the right to limit transfers during specific months to the quantity of water that would have been consumptively used (or irretrievably lost to beneficial use) by the transferor during those months. If the transfer of consumptive use water during such months would have an unreasonable impact on the water supply, operations or financial condition of the Company or its water users, the Company may further limit the transfer.

5. Correlative Share Limitation: The amount of Company water that can be transferred without unreasonable impacts on the water supply, operations and financial conditions of the Company and its water users is limited. The Company considers the rights of individual landowners to transfer their water supplies to be limited to a correlative share of the total transferable supply. The Company will not approve any transfer proposal that would prevent other landowners from transferring their correlative shares of the transferable supply of Company water.

6. Groundwater Limitations:

a. General Limitation. It has been judicially determined that the groundwater supply underlying the lands within the Company is overdrafted. As the supply is overdrafted, any substitution of the use of groundwater for transferred surface water will result in significant long-term adverse impact on groundwater conditions within the Company's service area, and would result in an unreasonable interference with pumping rates or capacities of wells within the Company service area. That, in turn, causes unreasonable impacts on the water supply, operations, and financial condition of the Company and its water users.

For this reason no transfer of groundwater to areas outside the Company service area will be approved and no transfer of surface water without fallowing the land to which such surface supply would have been delivered will be approved.

7. Transferee Limitations: In order to promote the purposes of the Central Valley Project Improvement Act of 1992, and to avoid unreasonable impacts on the water supply, operations, and financial condition of the Company and its water users, the Company will not approve a water transfer proposal unless:

a. The transferee conducts a water conservation program that includes efficient water management practices, or is in compliance with an urban water management plan under Water Code §10610 *et seq.*, an urban water shortage contingency plan under Water Code §10621, §10631, and §10656, or an agricultural water management plan adopted pursuant to Water Code §10800 *et seq.*;

b. The transferee conducts a drainage program to assure that the water transfer will not cause a deleterious effect on lands downslope from any lands irrigated as a result of the transfer; and

c. The transferee demonstrates that it will not be dependent upon the transferred water supply at the end of the term of the proposed transfer, and will be able to relinquish the transferred water supply at that time.

8. Submission of Proposals:

a. Preliminary Proposals. A transferor may submit a preliminary water transfer proposal to the Company prior to the submission of a formal water transfer proposal. The purpose of a preliminary water transfer proposal is to provide an informal review by Company staff in order to advise the transferor of possible requirements, conditions or objections if a formal proposal is made. The response of the Company to a preliminary proposal shall be deemed tentative and subject to change if a formal transfer proposal is made.

b. Formal Proposals. No later than the date the formal water transfer proposal is submitted to the USBR, the transferor shall submit two (2) complete copies to the Company. A proposal shall be deemed complete for the purposes of Company review only when it has been deemed complete by USBR and contains sufficient information for the Company to determine the impact of the proposed transfer on the water supply, operations and financial conditions of the Company and its water users, and compliance with CEQA. The transferor must supply any additional information requested by the Company in order to enable the Company to meet its responsibilities to review the proposal.

(c) Agreement to Fallow Land. No formal proposal shall be complete without an agreement by the transferor to fallow the land to which the transferred water would have been delivered for each crop year in which a transfer is made.

9. Hearings: The Company may conduct one or more public hearings in order to determine the impact of the proposed transfer on the water supply, operations and financial conditions of the Company and its water users, and to ensure compliance with CEQA. The transferor, and the transferee, or their respective representatives, shall attend any such hearing if requested to do so by the Company in order to respond to questions and comments regarding the impact of the proposed water transfer.

10. Future Modifications: Company-approved transfers shall be subject to modification from time to time in response to:

a. Changes in applicable laws, regulations, contracts and court decisions;

b. Changed circumstances that cause a transfer to result in unreasonable impacts on the water supply, operations, or financial conditions of the Company or its water users;

c. Proposals by other water users within the Company to transfer their correlative share of the Company's transferable water supply that, if approved,

would result in more than twenty percent (20%) of the Company's long-term water supply under contract with USBR being committed for transfer.

11. Costs: The transferor shall be responsible for all costs incurred by the Company in processing the water transfer proposal and administering the water transfer itself. Such costs shall be charged to the transferor on a time-and-rnaterials basis in accordance with generally accepted accounting practices. A deposit of $_____ shall accompany the proposal. If it appears to the Company that the deposit will be inadequate to cover the Company's costs, the Company may issue a written cost estimate, or estimates, to the transferor. The transferor shall deposit with the Company the funds necessary to meet such supplemental cost estimates. The Company shall charge its costs against the transferor's deposits and shall render an accounting to the transferor upon request, but not more often than monthly. Any unexpended portion of the transferor's deposits shall be refunded upon completion of the transfer. If the transferor fails to deposit sufficient funds to cover the Company's costs, the deficiency shall be due upon submission of an invoice from the Company to the transferor. If the transferor fails to pay the invoice, the amount due may, at the Company's election, result in forfeiture of the right to receive water, and of the transferor's stock, pursuant to Article X of the Company's Bylaws.

12. Charges: Before any water is transferred in a given water year, the transferor shall pay to the Company in full:

(a) All additional water rates and charges due to the Bureau of Reclamation which the Company is obligated to collect on account of the approved water transfer.

(b) The Company's water charges and assessments for that year's water supply to the land from which the water is being transferred.

(c) The transferor shall also pay, in advance of the transfer, any standby charges attributable to the subject land for the year of the transfer, and any delinquencies on account of past water charges, standby charges or assessments.

13. Indemnification: The transferor and transferee shall defend, indemnify, and hold harmless the Company against any claims of third parties that the transfer:

a. Violates the terms of that certain contract dated February 14, 1968 between CENTRAL CALIFORNIA IRRIGATION DISTRICT, COLUMBIA CANAL COMPANY, SAN LUIS CANAL COMPANY, and FIREBAUGH CANAL COMPANY entitled "Second Amended Contract For Exchange of Waters";

b. Is not a beneficial or reasonable use of water;

c. Violates any law or regulation including, but not limited to the National Environmental Policy Act (NEPA), CEQA, Endangered Species acts, Water Quality statutes, and Area of Origin laws; or

d. Has caused or will cause injury or damage to any person or property, including violations of any contracts, leases, trust deeds or water rights.

e. The transferor and transferee shall also defend, indemnify and hold harmless the Company from any claims that the transferor or transferee have breached any contractual or statutory duties pertaining to the transfer.

f. In addition, the transferor shall relinquish for the duration of the approved transfer the right to receive from the Company the water supply that is the subject of the approved transfer. The transferor and transferee shall abide by the termination date of the transfer unless extended in the manner provided by law and not contest the return of the transferred water supply to the Company's service area upon such termination. In particular, the transferee shall waive any

claim of dependency, detrimental reliance, or intervening public use as a basis for extending the water transfer beyond its approved term.

g. Prior to approval of the proposed transfer, the Transferor shall deliver to the Company an agreement, in a form acceptable to the Company, signed by the Transferor and Transferee by which they agree to conform to these Rules and Regulations, and in particular this Article 13 and transferor agrees to fallow the land to which the transferred water would have been delivered. .

The foregoing regulations were adopted by the Columbia Canal Company at a regular meeting of its Board of Directors on July 8, ____, 1993.

INDEMNIFICATION AND FALLOWING AGREEMENT

INDEMNIFICATION AND FALLOWING AGREEMENT

This Agreement is made by and between COLUMBIA CANAL COMPANY (hereinafter "Company") and the hereinafter named Transferor and Transferee on the date hereinafter set forth in the County of Madera, State of California.

TRANSFEROR:

TRANSFEREE:

PROPOSED
TRANSFER:

In consideration of Company's approval of their proposed water transfer, and in order to prevent unreasonable impacts on Company's water supply, operations, and financial condition, the above-named Transferor and Transferee agree and covenant as follows:

1. TRANSFER SUBJECT TO RULES AND REGULATIONS.

1.01 The said transfer shall be subject to the Company's "Rules and Regulations Governing Transfers of Water Under the Central Valley Project Improvement Act of 1992 (PL 102-575)".

2. JOINT INDEMNIFICATION.

2.02 The Transferor and Transferee jointly and severally agree to defend, indemnify and hold harmless the Company against any claims of third parties that the transfer:

a. Violates the terms of that certain contract dated February 14, 1968 between CENTRAL CALIFORNIA IRRIGATION DISTRICT, COLUMBIA CANAL COMPANY, SAN LUIS CANAL COMPANY, and FIREBAUGH CANAL COMPANY entitled "Second Amended

Contract For Exchange of Waters ";

b. Is not a beneficial or reasonable use of water;

c. Violates any law or regulation including, but not limited to the National Environmental Policy Act (NEPA), CEQA, Endangered Species acts, Water Quality statutes, and Area of Origin laws; or

d. Has caused or will cause injury or damage to any person or property, including violations of any contracts, leases, trust deeds or water rights.

3. RELINQUISHMENT OF RIGHT TO RECEIVE WATER.

3.01 The Transferor relinquishes for the duration of the approved transfer the right to receive from the Company the water supply that is the subject of the approved transfer for use on the land within Company's service area.

4. TRANSFEROR TO FALLOW LAND.

4.01 Transferor agrees for the _____ crop year(s) and any subsequent crop years for which this transfer may be extended to fallow the property described in Exhibit A attached hereto which lies within the service area of Company which would have been entitled to receive all or portions of the water transferred.

4.02 The word "fallow" as used herein shall mean that the land will not be used to grow irrigated crops. Any non-irrigated crop may be grown thereon.

4.03 Transferor further agrees that while the land is fallowed that it will be kept clear of weeds or noxious plant life so that the same will not be allowed to go to seed.

4.04 Transferor agrees that if he fails to comply with the provisions of this Article 4 that Company, together with any other remedies available under the laws of the State of California, may terminate delivery of the transferred water to Transferee and terminate delivery of Company water to Transferor for the

land herein described until compliance with the terms hereof is made by Transferor.

5. TRANSFEROR TO INDEMNIFY COMPANY.

5.01 The Transferor agrees to defend, indemnify and hold harmless the Company from any claims that the transfer violates the rights of any tenants or other persons having any interest in the Transferor's land or water supply.

5.02 The Transferor further agrees to defend, indemnify and hold harmless the Company from claims that the Transferor has breached the terms of any agreements relating to the transfer of the water supply, or has failed to comply with any applicable laws or regulations, or has negligently or intentionally caused any injury or damage in the implementation of the water transfer.

6. TRANSFEREE TO INDEMNIFY COMPANY.

6.01 The Transferee agrees to defend. indemnify and hold harmless the Company from any claims that the Transferee has breached the terms of any agreement relating to the transfer of the water supply, or has failed to comply with any applicable laws or regulations, or has negligently or intentionally caused any injury or damage in the implementation of the water transfer.

6.02 The Transferee covenants to abide by the termination date of the transfer unless extended in the manner provided by law and not to contest the return of the transferred water supply to the Company's service area upon such termination.

6.03 In particular, the Transferee waives any claim of dependency, detrimental reliance, or intervening public use as a basis for extending the water transfer beyond its approved term or any approved extension thereof.

6.04 Transferee recognizes that this transfer may be terminated as to future deliveries if Transferor violates the provisons of Article 4 hereof.

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7. GENERAL PROVISONS.

7.01 The foregoing indemnification provisions expressly include indemnification of the Company for any fees of attorneys, consultants or expert witnesses reasonably incurred by the Company in protecting itself against the subject claim or claims.

7.02 This Indemnification Agreement shall be binding upon the heirs, successors and assigns of the Transferor and Transferee. A re-transfer of the water supply by the Transferee to a third party shall not relieve the: Transferee of any obligations under this agreement and any Re-transferee shall be subject to all of the terms and provisions hereof.

7.03 In the event suit is brought to enforce or interpret any part of this agreement, the prevailing party shall be entitled to recover as an element of their costs of suit, and not as damages, a reasonable attorneys fee to be fixed by the court. The "prevailing party" shall be the party who is entitled to recover their costs of suit, whether or not the suit proceeds to final judgment. A party not entitled to recover his costs shall not recover attorneys fees. No sum for attorneys fees shall be counted in calculating the amount of a judgment for purposes of determining whether a party is entitled to recover his costs or attorneys fees.

Dated :

_____
"Transferor"

Dated:

_____
"Transferee"

Dated:

Columbia Canal Company

By:_____
President
"Company"

Attachment E

SJ River Exchange Contractors Water Authority
Water Transfer Policy

SAN JOAQUIN RIVER EXCHANGE CONTRACTORS
WATER AUTHORITY
WATER TRANSFER POLICY

Adopted April 7, 2000
Adopted Revised Policy November 1, 2002
Adopted Revised Policy August 5, 2005

1. Background.

1.1 The San Joaquin River Exchange Contractors Water Authority (**SJRECWA**) is a joint exercise of powers authority formed and existing under California law. Its member agencies are Central California Irrigation District, San Luis Canal Company, Firebaugh Canal Water District, and Columbia Canal Company. These four entities are traditionally referred to collectively as the **Exchange Contractors**.

1.2 The **Exchange Contractors** hold pre-1914 water rights on the San Joaquin River. In order to facilitate the construction of the Central Valley Project, the **Exchange Contractors** and their predecessors entered into two contracts with the United States Bureau of Reclamation in 1939. The Purchase Contract conveyed excess San Joaquin River flows—the so called "high flows"--and reserved the first San Joaquin River flows—sometimes referred to as the "low flows"--to the **Exchange Contractors**. The Exchange Contract established the terms pursuant to which a substitute supply of water was to be delivered by the Bureau of Reclamation to the **Exchange Contractors** in lieu of their "low flow" diversions from the San Joaquin River. These agreements established the underpinnings for the Bureau of Reclamation to construct Friant Dam on the upper San Joaquin River and divert the river's natural flow north to Madera and Chowchilla through the Madera Canal and south into Kern County through the Friant-Kern Canal. The Exchange Contract specifies that so long as the **Exchange Contractors** are provided a quantified substitute supply of water, the **Exchange Contractors** will not exercise their pre-1914 right to divert water from the San Joaquin River. The Exchange Contract at Article 5a contemplates that most, if not all, of this substitute water will be delivered to the **Exchange Contractors** from the Sacramento River watershed, pumped from the South Delta, and conveyed by means of the Delta-Mendota Canal. The current Exchange Contract is the Second Amended Contract for Exchange of Waters, Contract No. Ilr-1144, executed February 14, 1968.

1.3 The **SJRECWA** was formed in 1993 to represent its four member entities in many water matters including issues related to water transfers.

1.4 In California, the concept of water transfers, also referred to as water marketing or water brokering, is considered by some to be a partial solution to the shortage of water. The underlying assumption is that market forces in a free market will reallocate water. In some circumstances, agricultural water users who manage a conjunctive use water resource area can, to some extent, provide flexibility which may, at times, facilitate transfers of water. The **Exchange Contractors** proactively manage their surface water, groundwater, and conserved water conjunctively to maximize its beneficial use.

2. Objective. The objective of this water transfer policy is to manage water transfers to provide a framework by which the **Exchange Contractors** manage water transfers on a sound scientific basis, and to provide a clear set of standards and guidelines that each transfer proposal must comply with. The approach is designed to (i) ensure that the quantity of water proposed for transfer is made available through technically sound methods and projects which are scientifically based and verifiable; (ii) provide sound analysis of potential water transfer impacts; (iii) properly develop and implement necessary mitigations; (iv) monitor on-going water transfers and water development projects to ensure that beneficial and conjunctive use objectives are met; (v) provide flexible and efficient use of available water resources; (vi) ensure that the water supply, operations, and financial condition of the **Exchange Contractors** and their water users are not unreasonably impacted, and third party impacts from the transfer are mitigated; and, (vii) establish, maintain and utilize a data bank that will be used to manage the **SJRECWA** AB 3030 Groundwater Management Plan.

3. Authority

3.1 A transfer of water is considered a beneficial use under state and federal law. (Water Code Section 1011; CVPIA Section 3405.)

3.2 The **Exchange Contractors** hold pre-1914 rights to appropriate water from the San Joaquin River. The California Legislature has declared that it is established policy of the State to facilitate the voluntary transfer of water and water rights. (Water Code Section 109.) The Costa-Isenberg Water Transfer Act adopted by the legislature in 1986 as Water Code Sections 470 and 475-484 provides that voluntary water transfers between water users can result in a more efficient use of water, alleviate water shortages and finds and declares that it is in the public interest to conserve all available water resources. Water transfers do not undermine the rights that are the basis of the transfer. Water Code Sections 1010, 1011, 1011.5, 1244, 1440, 1731, 1737 and 1745.07 were specifically added to provide protection to water right holders who transfer water.

3.3 The Bureau of Reclamation utilizes the water transfer authority provided for in CVPIA to facilitate Exchange Contract water transfers. Water transfers implemented in accordance with CVPIA Section 3405(a) are deemed by federal law to be a beneficial use of water.

4. Applicability. Proposals to transfer any water from the **Exchange Contractors'** service area are subject to the requirements of this policy.

5. Definitions. For purposes of this policy, "water district" shall mean any water district, irrigation district, municipality, federal water agency, state water agency, or similar entity that exists pursuant to federal or state law.

6. Criteria for Water Transfers

6.1 Basis for all water transfers.

6.1.1 The state water rights, that are the underpinning of the Exchange Contract, are owned by the individual **Exchange Contractors'** members. The federal contract rights pursuant to the Exchange Contract are similarly owned by the individual **Exchange Contractors'** members. Consequently, any transfer of water from the **Exchange Contractors'** service area must first be approved by the **Exchange Contractors'** member entity from which the water will be transferred and then by the **SJRECWA.**

6.1.2 The **Exchange Contractors'** member entities share a water right in common, have a single water master who schedules water deliveries to the member entities, and have adopted a single groundwater management plan. The **Exchange Contractors** actively manage their surface water, groundwater and conserved water resources conjunctively, and manage water application within their service area to minimize drainage discharges from their service area and to cope with regulatory requirements imposed by law. Thus, all proposals to transfer water must be submitted by an **Exchange Contractors'** member entity and by the **SJRECWA** on behalf of its member entities, and water transfer proposals shall not be accepted from individual landowners. An individual landowner who proposes a water transfer must submit the proposal to the landowner's member entity, and, if approved by the member entity, shall be submitted by the member entity on behalf of the individual landowner.

6.1.3 It is imperative to protect the member entity's water rights and to assure

that no water right is assigned; therefore, only annually severable water transfers will be considered.

6.2 Water transfer types.

6.2.1 All water transfers shall be proposed by an **Exchange Contractors'** member entity. Additionally, the individual entities may propose a transfer jointly with any or all of the member entities. A transfer of water proposed jointly by all of the member entities shall be handled as a **SJRECWA** water transfer.

6.2.2 Therefore, transfer proposals are limited to three types:

6.2.2.1 A transfer of water by the **SJRECWA** on behalf of its four member entities.

6.2.2.2 A transfer of water by an **Exchange Contractors'** member entity to another water district.

6.2.2.3 A transfer of water by an **Exchange Contractors'** member entity to a water district that is made on behalf of an **Exchange Contractors'** landowner who is entitled to receive Exchange Contract water.

6.3 Water to be transferred. Water that is subject to transfer may be from an **Exchange Contractors'** member entity's water entitlement allocated pursuant to the Exchange Contract Division of Water Agreement, or from a member entity's non-allocated water supplies.

6.4 Generation of transferable water. Transferable water can be generated by using standard methods of conservation, groundwater substitution, or fallowing depending on the special hydrologic conditions that exist within the service area where the water is being generated as determined in paragraph 6.6.

6.5 Transferees. Water shall only be transferred to a water district.

6.6 Technical standards. All water transfers are subject to the technical standards and criteria adopted by the individual entity that proposes the transfer, and the **SJRECWA.** The technical standards are attached hereto as Appendices.

6.7 Priority of Transfers. All transfers are subject to the following priorities:

6.7.1 First priority shall be given to transfers initiated by the **SJRECWA** on behalf of its four member entities, and/or a transfer by an **Exchange Contractors'** member entity that enables an individual landowner within the member entity's service area to transfer water to a CVP ag service contracting water district for their own use in that water district.

6.7.2 Second priority shall be given to transfers initiated by an **Exchange Contractors'** member entity.

6.7.3 Third priority shall be given to transfers proposed by an **Exchange Contractors'** member entity on behalf of one of its landowners.

6.7.4 For illustrative purposes, the attached Appendix "A" provides an example of how the priority system would be implemented under the following three scenarios: 1) the transfer demands are less than the transfer supply during a normal water year; 2) the transfer demands are greater than the transfer supply during a normal water year; and, 3) a critical water year.

6.8 Limitation on Quantity of Water Transferred. Each year, a maximum shall be imposed on the quantity of water that can be transferred out of the **Exchange Contractors'** service area. The maximum shall be based upon a water budget developed in the **Exchange Contractors'** service area on a sub-basin by sub-basin basis. Each year, as soon as practicable, and not later than the **Exchange Contractors'** November board meeting, the maximum transfer quantity for the upcoming water year shall be announced. The announced maximum shall not be changed upward or downward from the announced maximum unless clear and convincing scientific evidence supports the change. Transfers initiated by **SJRECWA** will not be permitted in a critical water year designated under the Exchange Contract.

6.8.1 Internal Allocation of Transferable Water: On an annual basis, any Exchange Contractors' member entity may assign any portion of their maximum percent allocation to one or more of the Exchange Contractors' member entities and this assignment will increase the recipient Member Entity's share of transfers in the classifications stated below. The baseline for determining the Exchange Contractors' member's maximum percent allocation is the 1978 Division of Water Agreement subject to modifications pursuant to

Sections 6.8.2.1 and 6.8.2.2.

6.8.2 Transfers will be classified as: (i) conservation or groundwater transfers (80,000 AF maximum) or (ii) fallowing transfers (50,000 AF maximum). The income from each classification of transfer will be blended and distributed to the member entities in proportion to the amount of water contributed by each entity.

6.8.2.1 In regard to transfers based upon conservation or groundwater pumping, if a member entity elects not to utilize its share of the allocation or elects not to assign to another member entity a portion of its allocation, the unutilized portion of the allocation shall be made available to the other member entities in proportion to the Exchange Contractors' 1978 Division of Water Agreement.

6.8.2.2 In regard to fallowing transfers, if a member entity elects not to utilize their full allocation and elects not to assign their unused allocation to another member entity, that portion of the allocation of fallowing-based transfers shall not be allocated to other member entities for transfer.

6.9 Annual Establishment of Transferees and Maximum Quantities of Water to be Transferred to Each Transferee. Each year by no later than October 31st, the **SJRECWA** shall establish the transferees and maximum quantities of water to be transferred to each transferee. The water needed to meet these obligations will be in accordance with the transfer priorities established by Section 6.7.

6.10 Water Transfer Committee.

6.10.1 A **SJRECWA** Water Transfer Committee is established to review all transfer proposals that are submitted consistent with this policy. It will review and analyze the technical data upon which each transfer is based, and make a recommendation on each water transfer proposed. The membership of the committee will include the manager of each of the **Exchange Contractors'** member entities, and two members of the **SJRECWA** governing board, or a member's alternate, appointed by the President of the board. The committee may retain technical consultants.

6.10.2 The committee shall review each transfer proposal, and each approved transfer annually, to ensure that it meets the stated objectives, technical standards, and criteria of this policy.

6.10.3 Due to the fact that the **Exchange Contractors** and their landowners conjunctively use surface and groundwater resources, where a water transfer is proposed from lands that the committee believes will not participate fully in the conjunctive use program, the committee may limit a water transfer to the amount of groundwater used by the lands initiating the transfer so that those lands do not exceed annually their fair share of the safe yield.

6.10.4 The committee shall review each transfer proposal, and each approved transfer annually, to consider whether it is likely to cause unreasonable impacts to the overall water supply, water management operations, or financial condition of the transferor entity or its water users, and whether member entity impacts that result from the transfer will likely be mitigated.

6.10.5 The committee shall make a recommendation to the **SJRECWA** Board of Directors on each proposed transfer, and an annual recommendation for the continuation or termination of each approved transfer, based upon analysis of technical criteria developed pursuant to paragraph 6.6.

6.11 Water Transfer Fees, Mitigation Costs, and Water Transfer Proceeds.

6.11.1 Where a transfer is made by a **SJRECWA** member entity, the entity will allocate a portion of the income from the water transfer to conservation projects and/or water distribution and drainage facilities, or other similar projects and actions that benefit its water users.

6.11.2 Any Bureau of Reclamation, or state agency water transfer application and environmental assessment fee shall be the responsibility of the transferring entity.

6.11.3 The processing by **SJRECWA** of a water transfer will require the payment by the transferring entity of all costs associated with the transfer. Such cost shall include but not be limited to management and study costs associated with administration of the Transfer Policy. For example, where a transfer involves groundwater, the transferring entity will be responsible for the cost (i) to determine safe annual yield of groundwater, (ii) for

monitoring required to analyze groundwater conditions both in terms of quantity and quality, (iii) the amount of applied water that recharges the groundwater or enters drainage systems, and (iv) to study and monitor for subsidence impacts.

6.11.4 The **SJRECWA** shall be the fiscal agent for all water transfers.

6.12 Environmental Requirements. The environmental review requirements of NEPA and CEQA must be complied with before the **Exchange Contractors** will process a transfer application and all such costs shall be born by the transferring member entity.

6.13 Public Hearing. The **Exchange Contractors** may conduct a public hearing to determine the impact of the proposed transfer. The transferor and transferee must attend the hearing if requested to do so by the **Exchange Contractors** or by the entity from which the transferor is entitled to receive water.

6.14 Action by **SJRECWA** Board of Directors. All water transfers must be approved by unanimous vote of the **SJRECWA** Board of Directors. A water transfer proposal along with the recommendation by the Water Transfer Committee will be considered by the **SJRECWA** Board of Directors, and the transfer approved, disapproved, or returned to the Water Transfer Committee for further action as directed by the Board.

APPENDIX "A"

Illustration of Transfer Policy Priority System

Annually the SJRECWA shall establish:

1. Annual Maximum – The maximum annual amount of water to be transferred from the SJRECWA developed on a sub-basin by sub-basin level.(section 6.8).

2. Demand – The maximum quantities of water to be transferred to each transferee shall be established by no later than October 31st of each year. (section 6.9).

3. SJRECWA Supply – The amount of water available under a SJRECWA transfer and/or a transfer by an **Exchange Contractors'** member entity that enables an individual landowner within the member entity's service area to transfer water to a CVP ag service contracting water district for their own use in that water district. First priority. (section 6.7.1).

4. Individual Entity Supply – The amount of water available under an individual entity transfer. Second priority. (section 6.7.2) .

5. Individual Entity on behalf of landowner supply – The amount of water available for an entity on behalf of a landowner, limited by the maximum demand. Third priority. (6.7.3)

The application of the priority system described in section 6.7 is limited to determining quantities of transfer demand to be met by each of water transfer types. It will be calculated as follows (section 6.9):

	TOTAL DEMAND
Less	***Amount available through SJRECWA initiated and/or Exchange Contractors' member entity that enables an individual within the member entity's service area to transfer water to a CVP ag service contracting water district for their own use in that water district (priority 1)***
Equals	***Amount available for priority 2 and priority 3***
Then	***Amount available through priority 2 and priority 3***
Less	***The amount of water available under an individual entity transfer (priority 2)***
Equals	***Amount available through priority 3***

Individual landowners will be notified of the amount of transfer demand available to be met by the third priority. They will be required to determine their level of participation (through fallowing as an example) as soon as possible.

To further illustrate the priorities, below are three types of water year scenarios:

NORMAL YEAR

100 % allocation to EC; demand is 95,000 af which exceeds Supply

Priority		Supply	Demand	Amount Transferred
1	SJRECWA/ dist. to dist. initiated	75,000	85,000	75,000
2	Exchange Contractor Entity Initiated	5,000	5,000	5,000
3	Exchange Contractor Entity Initiated on behalf of Individual	5,000	5,000	5,000
		85,000	95,000	85,000

Total amount transferred **85,000**

NORMAL YEAR

100 % allocation to EC; demand is 65,000 af and is less than Supply

Priority		Supply	Demand	Amount Transferred
1	SJRECWA/ dist. to dist. initiated	75,000	65,000	65,000
2	Exchange Contractor Entity Initiated	5,000	0	0
3	Exchange Contractor Entity Initiated on behalf of Individual	5,000	0	0
		85,000	65,000	65,000

Total amount transferred **65,000 af**

CRITICAL YEAR

75 % allocation to EC; demand is 25,000 af and is greater than Supply

Priority		Supply	Demand	Amount Transferred
1	SJRECWA/ dist. to dist. initiated	0	0	0
2	Exchange Contractor Entity Initiated	0	0	0
3	Exchange Contractor Entity Initiated on behalf of Individual	5,000	25,000	5,000
		5,000	25,000	5,000

Total amount transferred **5,000 af**

(Appendix to Subparagraph "6.6")

Maximum Quantity of Water Transferable from the
Exchange Contractors Service Area due to fallowing

Adopted August 5, 2005

Land Fallowing
Technical Standards and Guidelines

1. The requirements of this section will be the responsibility of the Entity from which the fallowing transfer is proposed to provide or implement.
2. **Maximum Quantity of Transferable Water**
    a. The maximum quantity of water (Max Transferable) that can be transferred by a landowner fallowing land is the *lesser of the monthly* ***Consumptive Use*** *of the crop being fallowed or the* ***Exchange Contractor Entity Deliverable Monthly Entitlement.*** (Subject to **Adjustments** within paragraph d.)
    b. **Consumptive Use**
        i. The consumptive use will be calculated using the average of the crops grown on the land for the past three normal water years.
        ii. Consumptive Use (CU) = Evapotranspiration Crop + Required Leaching Fraction (LF) – Effective Precipitation.
            1. CU = Etc + LF – EP
        iii. Etc is calculated on a monthly time step for the calendar year. Data on the baseline three year average ETo and rainfall is collected from the nearest CIMIS station(s). The crop coefficients (Kc) are taken from the SWRCB report # 84-1.
        iv. LF is calculated based on the methodology outlined in the Western Fertilizer Handbook. The ECe and ECw are shown on the attached example. However these may be updated by the Exchange Contractors.

v. EP is 50% of the three year average rainfall measured at the nearest CIMIS station(s).

c. **Exchange Contractor Entity Deliverable Monthly Entitlement**

i. The deliverable monthly entitlement is that quantity of Exchange Contract Water, on average, (not other water such as well water) that can be delivered to farmed fields within the entity.

ii. The deliverable monthly entitlement is calculated on a per acre basis.

1. The deliverable monthly quantities are the Division of Waters Agreement quantities less system losses and other commitments divided by total entity acreage.

d. **Adjustments**

i. The deliverable monthly entitlement may be accumulated (bath tubbed) for the 7 month period so long as the bath tub is being provided by Reclamation in accordance with the Refuge Water Transportation Agreement.

3. Determination of Acreage of Fallowed Land

a. Acreage of Fallowed land will be based on farmed acres not assessed acreage.

i. The following are acceptable methods for determining farmed acreage:

1. FSA data base;
2. Measurements based on aerial photography;
3. Field measurements, and;
4. Equivalent methods approved by the transfer committee.

b. To the extent possible whole fields will be fallowed.

c. If only a portion of a field is to be fallowed then the fallowed portion must be physically separated from the farmed field by levee or drain. (It is important that surface water not be applied to the fallowed land.)

CRITERIA CHECKLIST FOR A COMPLETE WRITTEN PROPOSAL FOR A TRANSFER FROM AN ENTITY ON BEHALF OF LANDOWNERS FALLOWING LAND

Adopted August 5, 2005

1. Name and address of Transferring Entity
2. Names, addresses and locations of the landowners for whom the Transferring Entity is Transferring water on behalf of.
3. If all or a portion of the transfer proposal by the Entity is on behalf of a Landowner for his own use in another District, then:
    a. Provide name, address and location of the Receiving District
    b. Provide detailed location maps of the area(s) proposed to receive the transferred water.
    c. Provide documentation (assessors or other data) showing ownership of area(s) proposed to receive water.
    d. The transferring entity shall, at the end of the water season, provide a water balance for water use and consumptive use on receiving lands to demonstrate that deep percolation is not contributing to the down slope drainage problem.
4. Provide crop maps showing the locations of fields being fallowed.
5. Provide a tabulation of the acreage of fields being fallowed and the crops grown during the last three normal water years.
6. State the quantity of water involved within the transfer and identify the proposed use for the transferred water.
7. Provide the calculations of the **Maximum Quantity of Transferable Water** based on the Land Fallowing Technical Standards and Guidelines.
8. State that the entity will be responsible to field verify that fallowing is accomplished as proposed and that an end of the year report on the fallowed lands will be provided.

9. Provide a complete written description of the transfer proposal, including any special water transfer scheduling.
10. Attach statement by the Entity from where the water is being transferred that the transfer will have no unreasonable impact on water supply, operations, or financial condition of the Entity or its water users.
11. State that the entity will guarantee that the fallowed lands will be maintained so as to not create a nuisance to neighboring lands.

Attachment F

Sample Water Bill

COLUMBIA CANAL COMPANY
6770 AVENUE 7 1/2
FIREBAUGH, CA 93622

Water Assessment

DATE	INVOICE #
1/2/2012	2012-44

BILL TO

JOHN TEIXEIRA
11356 ROAD 5 1/2
FIREBAUGH, CA 93622

TERMS	DUE DATE
30 Days	2/1/2012

ITEM	DESCRIPTION	QTY	RATE	AMOUNT
ASSESSMENT	ASSESSMENT FOR 1ST QTR., SEC 16	21	12.50	262.50

1ST QTR DELINQUENT FEB 1

Total $262.50

Accounts not paid in 30 days are Delinquent & water delivery may be stopped, 1.5% per Month charged. Accounts Delinquent for 1 Year may have a lien placed on the property for Charges & Interest.

Phone #
(559) 659-2426

COLUMBIA CANAL COMPANY
6770 AVENUE 7 1/2
FIREBAUGH, CA 93622

Water Assessment

DATE	INVOICE #
1/2/2012	2012-46

BILL TO

WANDZELL JR., EDWARD M.
19132 SOUTH CENTER
DOS PALOS, CA. 93620

TERMS	DUE DATE
30 Days	2/1/2012

ITEM	DESCRIPTION	QTY	RATE	AMOUNT
ASSESSMENT	ASSESSMENT FOR 1ST QTR., SEC 22	0.5	12.50	6.25
ASSESSMENT	ASSESSMENT FOR 1ST QTR., SEC 22	0.27	12.50	3.38
ANNUAL ASSES...	ANNUAL ASSESSMENT- ADDITIONAL 3 QUARTERS	9.63	3.00	28.89

Annual

1ST QTR DELINQUENT FEB 1

Total $38.52

Accounts not paid in 30 days are Delinquent & water delivery may be stopped, 1.5% per Month charged. Accounts Delinquent for 1 Year may have a lien placed on the property for Charges & Interest.

Phone #
(559) 659-2426

Attachment G

Updated 3030 Groundwater Management Plan
Adopted April 4, 2008

UPDATED 3030 GROUNDWATER MANAGEMENT PLAN FOR THE SAN JOAQUIN EXCHANGE CONTRACTORS

Prepared for:
San Joaquin River Exchange Contractors Water Authority
Los Banos, California

by
Kenneth D. Schmidt and Associates
Groundwater Quality Consultants
Fresno, California

February 2008
Adopted - April 4, 2008

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS
600 WEST SHAW, SUITE 250
FRESNO, CALIFORNIA 93704
TELEPHONE (559) 224-4412

February 12, 2008

Mr. Steve Chedester
Executive Director
San Joaquin River Exchange
Contractors Water Authority
541 H Street
Los Banos, CA 93635

Re: Groundwater Management Plan

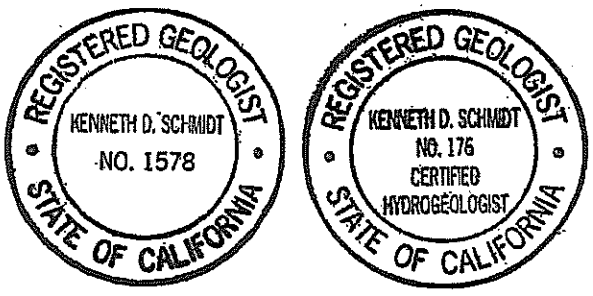
Dear Steve:

Submitted herewith is our report on Updated 3030 Groundwater Management Plan within the Exchange Contractors services area.

Sincerely yours,

Kenneth D. Schmidt
Geologist 1578
Certified Hydrogeologist 176

KDS/pe



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INTRODUCTION

General

The San Joaquin River Exchange Contractors Water Authority ("Exchange Contractors" or "Authority") is a Joint Powers Authority organized under the Joint Exercise of Power Act. The member agencies are Central California Irrigation District ("CCID"), Firebaugh Canal Water District ("FCWD"), Columbia Canal Company ("CCC") and San Luis Canal Company ("SLCC"). Each of the entities is a holder in common of certain priority water rights, which are the subject matter of an agreement executed on February 14, 1968, between the United Sates of America ("Bureau of Reclamation, Department of Interior" or "USBR") and the Exchange Contractors. The title of the agreement is the "Second Amended Contract for Exchange of Waters" (Contract No. Ilr-1144), commonly known and referred to as the "Exchange Contract". The Exchange Contract confers upon the USBR the right to utilize the subject water so long as USBR delivers specified quantities of substitute water at specified locations via the Delta-Mendota Canal.

The Authority

The Authority is empowered to administer and protect the jointly held water rights under the Exchange Contract and power

incidental, necessary and convenient thereto, administer operation under the Division of Water Agreement and represent the Exchange Contractors in many water matters, including, but not limited to, operation of the Central Valley Project, conjunctive use of groundwater and surface supplies, water conservation, reclamation, transfers, drainage, management of the San Francisco Bay-Delta Estuary, environmental considerations and related legislation, litigation, and administrative proceedings. The Exchange Contractors Water Authority is committed to managing its ground and surface water resources to replenish and preserve its groundwater.

AB 3030

The State Legislature enacted AB 3030 (Costa), the Groundwater Management Act, in 1992. The act was codified as Part 2.75, commencing with Section 10750 of Division 6 of the Water Code and became effective January 1, 1993.

1. The act applies to all groundwater basins in the state, except any portion of a groundwater basin that is subject to groundwater management by a local agency or a water master pursuant to other provisions of law, court order, judgement, or decree, unless the local or water master agrees.

2. It provides that any local agency, whose service area includes an applicable groundwater basin, may by ordinance or resolution,

adopt and implement a groundwater management plan within a part or all of its service area in accordance with certain procedures.

The Role of Groundwater in the Exchange Contractors Water Operations

The conjunctive use of groundwater within the Exchange Contractors service area is required due to surface water delivery restrictions contained within the Exchange Contract. In addition, peak irrigation demands within certain areas exceed surface water distribution channel capacities. Groundwater is pumped and delivered into the system to make up capacity shortfalls.

1. The Exchange Contract provides both non-critical and critical surface water entitlement maximums on a per month basis, on a five-month basis (January, February, March, November, and December), and on a seven-month basis (April through October). In addition, monthly maximum instantaneous delivery flow rates are defined. Provisions are made to allow deliveries in excess of these rates if it can be done without detriment to the United States or its other obligations.

2. The Exchange Contract entitlement maximums and the instantaneous flow limits require conjunctive use of surface and groundwater to meet peak crop water demands during June, July, and August. While USBR has historically allowed instantaneous flow deliv-

eries (except in 1992) in excess of the limits, the five-month and seven-month entitlement maximums remain in effect. When USBR provides this flexibility, the Contractors must pump groundwater from District owned wells during April, May, and early June to "bank" sufficient Exchange Contract water for use during peak demands in June, July, and August. Groundwater pumpage from District owned wells must continue through June, July, and August, due to the seven-month Exchange Contract maximum for surface water. During the rest of the water year, there are sufficient quantities of surface water to meet crop water demands and provide necessary quantities for storage in the aquifer for use during the critical months.

3. During critical water years the necessity for conjunctive use of water increases. The seven-month surface water entitlement maximums decrease during critical water years. The five month maximums are not reduced.

4. Private well pumpage within the Exchange Contractors service area also fluctuates in response to the non-critical or critical surface supply. As shown in Table 1, the total groundwater pumpage within the Exchange Contractors service area averaged about 160,000 acre-feet per year from 1996 to 2006. The pumping ranged from about 80,400 acre-feet in 1998 to 212,000 acre-feet in 2004. Tiered water prices are analyzed yearly based on the annual "deep

TABLE 1-WELL PUMPAGE INSIDE AND OUTSIDE OF THE CCID

CCID's WELLS (NO.)	TOTAL NO. OF WELLS (included in summary)	AB3030 SUB-AREAS	USING SAME METHODOLOGY FOR CALC'S 1996 REV.2002	1997 REV.2002	1998 REV.2002	1999 REV.2002	2000 REV.6/2002	2001	2002	2003	2004	2005	2006	96-05 AVERAGE (ALL WELLS) col. (h)	2006 DATA AS A PERCENT OF AVG. (% of col. h)	2006 PUMPAGE WELL LOCATION BRAKEDOWN: ALL WELLS IN (CCID) (a)	WELLS OUT of (CCID) (b)	CCID's WELLS already included in col. a	DMC PUMP-ER'S /AREA (already incl'd)
12	58	A	9,858	12,657	4,669	11,610	11,597	14,337	11,609	13,016	17,595	6,586	3,768	11,363	33%	3,768			
7	105	B	9,832	10,531	5,625	12,560	15,986	17,829	12,104	16,767	17,091	7,872	7,424	12,500	59%	7,424		64	
4	89	C	12,887	13,903	4,003	10,215	13,268	14,288	8,900	14,343	21,352	11,897	12,614	12,469	101%	12,614		21	612
1	21	D	2,872	4,318	3,534	3,402	2,050	2,988	1,413	2,051	2,631	1,582	187	2,682	7%	187			
28	123	E	30,773	29,853	5,588	27,043	32,336	38,728	34,388	39,726	39,539	21,815	11,850	29,977	40%	11,850		1,761	
	4	F		373				2,707	504	504			343	409	84%	343			
9	16	G	5,938	8,603	539	5,173	8,656	6,929	7,545	7,649	10,057	3,994	1,096	6,308	17%	1,096		120	
	88	H	4,843	10,550	9,852	8,431	30,240	24,452	23,108	15,869	22,989	8,851	11,667	15,878	73%		11,667		
	10	I			727	8	22		19	19			1,188	79	1509%		1,188		
	80	J	268			48	13,633	16,517	11,480	11,130	17,567	4,519	20,661	7,515	278%		20,661		
	84	O/S A	12,710	16,196	16,337	16,107	18,951	19,988	3,757	21,868	14,534	15,585	11,657	16,373	76%		11,657		
	83	O/S B	11,177	12,496	6,741	11,077	7,418	8,456	7,877	9,529	10,184	8,125	7,601	9,306	82%		7,601		
	194	O/S C	27,161	41,302	16,821	32,340	33,418	33,456	14,455	34,917	28,449	24,007	30,907	28,633	108%		30,907		1,388
	2	O/S D																	
	18	O/S E	3,294	3,274	2,224	4,992	1,653	910	2,696	6,129	3,652	2,810	3,430	3,044	113%		3,430		
	26	O/S G	1,618	4,352	3,755	387	824	1,436	621	3,451	3,537	3,284	876	2,328	38%		876		
	2	O/S H																	
	6	O/S I	84	1,329	10	989				59				242					
	5	O/S J					1,667	2,637	3,609	3,807	3,858	1,153	3,439	1,673	206%		3,439		
		USBR EXCHANGE CONTRACT WATER YEAR STATUS :	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	AVERAGE		(percent of 2006 pumpage) 29%	71%		
61	994	TOTALS->	133,278	166,739	80,404	144,381	191,669	204,445	144,084	198,332	212,913	121,651	128,919	159,788		37,283	91,636	1,955	2,000

1055 = TOTAL NO. OF WELLS IN STUDY

1996 -> 2005 AVE. = 159,788 - 128,919 REPRESENTS A -19% (INCREASE OR DECREASE OVER THE PREVIOUS 10 YR. RUNNING AVG.)

NOTES:

1. PUMPAGE BY C.C.I.D. CONSUMERS IN THE CENTRAL CALIFORNIA IRRIGATION DISTRICT:
   37,283 - 1,955 (CCID)]= 35,328 AF for 0.25 AF/AC
2. PUMPAGE OUTSIDE C.C.I.D. INCLUDES ALL DEEP WELLS WITHIN CITY LIMITS IN ADDITION TO DEEP WELLS USED FOR INDUSTRY AN
3. THIS ORIGINAL STUDY INCLUDED ALL KNOWN DEEP WELLS W RIVER FROM MARSHALL ROAD (CROWS LANDING) TO THE CAMP 13 AREA, EXIA COMBINATION , AND BY USING PAST OR AVERAGE PUMP TEST KWH/AF DATA, OR FROM REQUESTED DATA. THOSE IN THE SAN LUIS CANAL COMPANY AREA; THEN SOUTH FOR THE AREA BETWEEN THE SJR AND DELTA MENDOTA CANAL ON THE WES DAM AREA. A JULY 1995 REVISION MAKES THE SAN LUIS C.C. AND THE COLU IN ADDITION THERE ARE SOME 103 WELLS +- IN THE POOL PUMPER AREA AS OF 1/1/1998. C.C. AREA NOW INCLUDED.
4. C.C.I.D.'s (OWNED) WELL PUMPAGE IS INCLUDED IN THE "ALL WELLS IN CCID" TO THE 2001 STUDY. PREVIOUS YEARS OF 1996,1997, 1998, 1999 AND 2000 WERE REDONE THE SAME WAY.
5. ADDITIONAL PUMPAGE (NOT INCLUDED ABOVE) FROM THE MENDOTA POOL PUMPERS IS AS FOLLOWS:

1995 --	@NA	@NA	1997 --	28,431 AF	1999 --	24,899 AF	2001 --	40,139 AF	2003 --	18,629 AF	2005 --	10092 AF
1996 --	2,872 AF	2,872 AF	1998 --	2,024 AF	2000 --	37,822 AF	2002 --	24,135 AF	2004 --	15,558 AF	2006 --	3041 AF

6.

1995 --	0 AF	0 AF	1997 --	26,852 AF	1999 --	6,487 AF	2001 --	9,378 AF	2003 --	4,952 AF	2005 --	835 AF
1996 --	4,786 AF	4,786 AF	1998 --	12,722 AF	2000 --	9,831 AF	2002 --	3,837 AF	2004 --	3,099 AF	2006 --	2,000 AF

7. DATA IS INCOMPLETE IN THE COLUMBIA CANAL COMPANY AREA.
8. PUMPAGE IS CALCULATED FROM THE ANNUAL READINGS OF PG&E, HOUR, PROPELLER AF METERS AND OR
9. UP TO 1/1/1993 THERE WERE 619 WELLS IN INVENTORY; AS OF 1/1/1998, THE INVENTORY IS AT 950 WELLS;
10. DATA WAS CALCULATED USING A NEW METHODOLOGY IN REGARDS TO PG&E METER DATA, FOR THE PRESENT

PAST C.C.I.D. CONSUMER PUMPAGE

for 2005 =	0.19	AF / AC
for 2004 =	0.34	AF / AC
for 2003 =	0.31	AF / AC
for 2002 =	0.17	AF / AC
for 2001 =	0.34	AF / AC
for 2000 =	0.28	AF / AC-r
for 1999 =	0.27	AF / AC-r
for 1998 =	0.16	AF / AC-r
for 1997 =	0.30	AF / AC-r
for 1996 =	0.32	AF / AC-r
for 1995 =	0.50	AF / AC
for 1994 =	1.05	AF / AC
for 1993 =	0.93	AF / AC

well" study. This mechanism has been effectively utilized to implement conjunctive use of ground-water from both private and District owned wells.

5. In the FCWD, the groundwater has become unusable for agricultural purposes because of high levels of total dissolved solids (TDS), boron, and selenium. FCWD is able to provide surface water capacity to the other Exchange Contractors in return for their cooperation in utilizing groundwater during periods in which FCWD needs amounts of water in excess of that available from its share of the Exchange Contract supply. As a result, groundwater within CCID, SLCC, and CCC is conjunctively used, not simply with the surface deliveries within the service areas for those specific entities, but also within service areas of the other entities, as the availability of surface water under the Exchange Contract is not sufficient to meet crop water demands.

Entrix, Inc. (2007) reported on the Environmental Assessment/ Initial Study for the Groundwater Pumping/Water Transfer Project for 25 consecutive years. The primary source of of the water to be transferred is pumpage of poor quality shallow groundwater in the area west and northwest of Firebaugh. The easterly and northeasterly migration of the poor quality groundwater above the Corcoran Clay has been identified as a major groundwater management concern in Madera County.

GENERAL CONDITIONS OF THE EXCHANGE CONTRACTORS GROUNDWATER BASIN

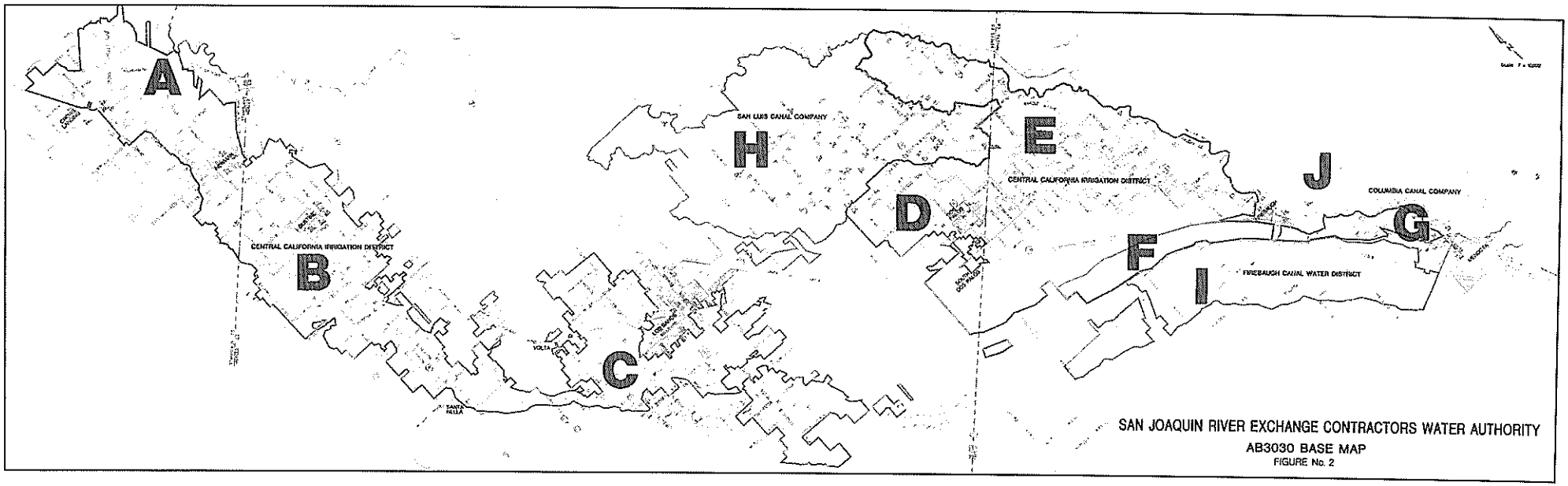
Figure 1 is the AB 3030 basemap of the Exchange Contractors service area. The service area is divided into sub-areas of generally similar aquifer, water supply, and drainage characteristics. Detailed evaluations of the groundwater conditions within the boundaries was performed by Kenneth D. Schmidt and Associates in 1997 ("Groundwater Conditions in and near Central California Irrigation District") and in 2007 "Update on Groundwater Conditions in the San Joaquin River Exchange Contractors Service Area". The evaluations included: 1) subsurface geologic conditions, 2) depth to water, water-levels elevations, the direction of groundwater flow, and water-level trends, 3) aquifer characteristics, based on numerous pump tests and aquifer tests on about two dozen wells, 4) land surface subsidence, and 5) groundwater quality in both the upper and lower aquifers.

DEMANDS ON THE GROUNDWATER BASIN

In addition to the yearly demands placed upon groundwater to meet the conjunctive use requirements to supplement the Exchange Contract surface water, other demands are placed upon the basin.

Surface Water Transfers

Each of the four entities comprising the Exchange Contractors have developed and adopted transfer policies as shown in Attachment


A
B
C
D
E
F
G
H
I
J
SAN LUIS CANAL COMPANY
CENTRAL CALIFORNIA IRRIGATION DISTRICT
CENTRAL CALIFORNIA IRRIGATION DISTRICT
COLUMBIA CANAL COMPANY
FIREBAUGH CANAL WATER DISTRICT
SAN JOAQUIN RIVER EXCHANGE CONTRACTORS WATER AUTHORITY
AB3030 BASE MAP
FIGURE No. 2

A. All water transfers have potential impacts on the aquifer. Three types of transfers are possible based on: 1) groundwater substitution, 2) fallowing of crops, and 3) conservation. Of these, groundwater substitution has the highest potential impact to groundwater. CCID, FCWD, and SLCC allow groundwater substitution type transfers, but the CCC does not allow groundwater substitution. Its policy states that "no transfer of groundwater to areas outside the Company service area will be approved and no transfer of surface water without fallowing the land to which such surface supply would have been delivered will be approved."

Groundwater Pumping into the Delta-Mendota Canal

The San Luis and Delta-Mendota Water Authority (SL&DMWA) has administered a program to allow groundwater pumping into the Delta-Mendota Canal for drought contingency. Figure 1, (the AB 3030 basemap), shows the groundwater pumping management areas developed by the SL&DMWA groundwater management committee. The potential impacts to the Exchange Contractors are 1) degradation of the surface water quality delivered through the Delta-Mendota Canal, and 2) land surface subsidence along the CCID outside canal and the Delta-Mendota Canal. High salinity and boron concentrations have been problems in many wells. For the most part, the pumped water is generally not suitable for use on crops without blending with the better quality surface water. Land surface subsidence along the

Outside Canal was discussed by KDSA (1997). The CCID is presently undertaking a five million dollar improvement project on the Outside Canal, to raise banks and replace structures due to subsidence. Subsidence along the Delta-Mendota Canal is shown in Figure 2.

Groundwater Pumping into the Mendota Pool

The Mendota Pool, on the San Joaquin River, is the location were the Exchange Contractors receive most of the substitute water under the Exchange Contract. For almost two decades, there has been concentrated groundwater pumping in the Mendota Pool area. The magnitude of the pumping depends in large part on the yearly allocations by the USBR to Central Valley Project agricultural contractors. In response to reduced allocations, groundwater pumped near the Mendota Pool is introduced into the Pool and either delivered to adjacent Central Valley Project agricultural contractors directly through pumping facilities or given credit for the groundwater pumped into the Pool and, in exchange, the USBR provides deliveries to Westlands Water District. The potential impacts of the pumping program are water quality degradation, well interference, and land surface subsidence affecting the Exchange Contractors gravity canal system headworks facilities and the Mendota Dam.

The Mendota Pool Group (MPG) transfer pumping began in 1989 to

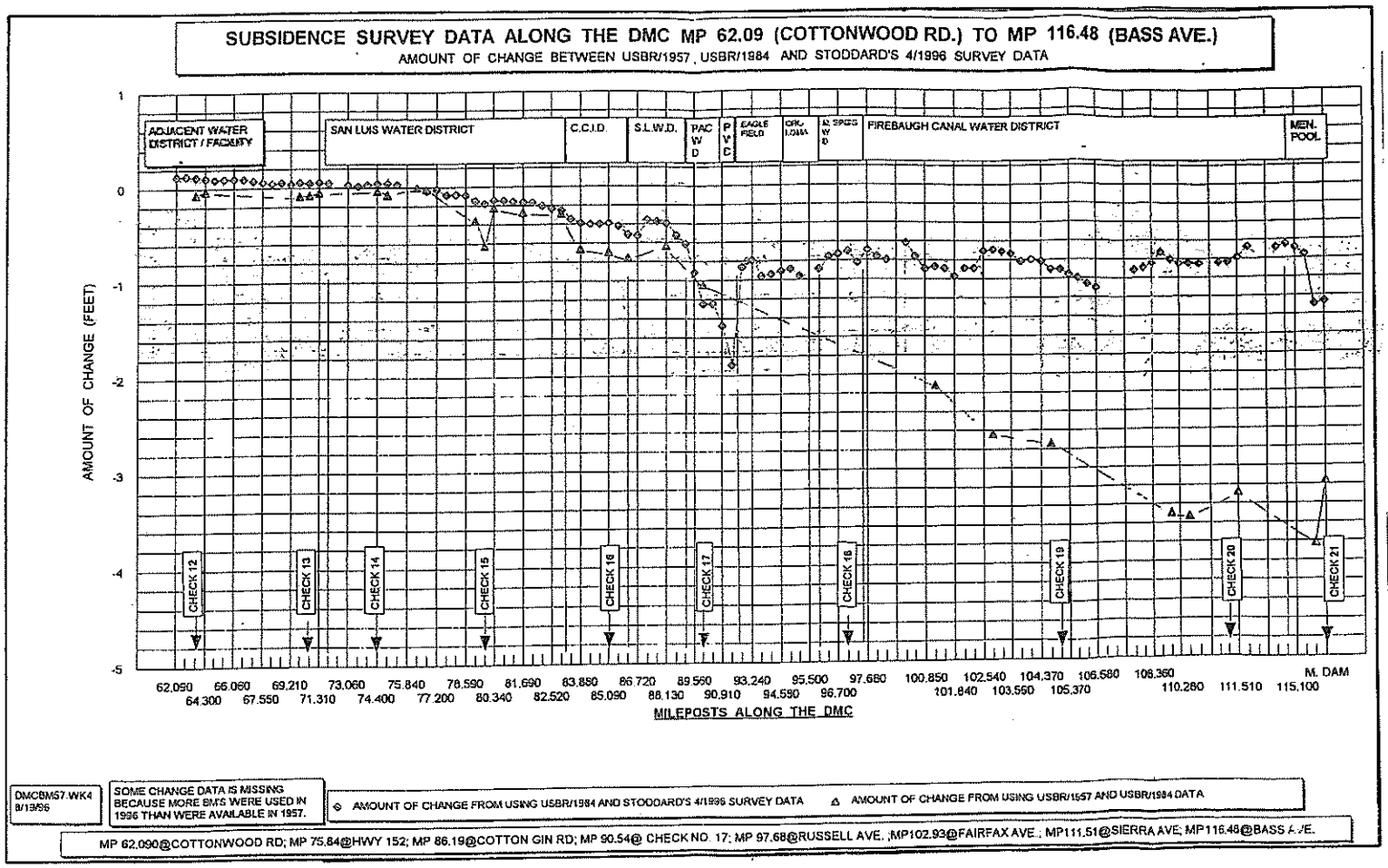


FIGURE 2-SUBSIDENCE ALONG THE DELTA-MENDOTA LAND

make up for some of the cutbacks in deliveries of Central Valley Project and State Water Project surface water during the drought. The greatest MPG transfer pumping was during 1991-1992 and 1994. There was little MPG transfer pumping between 1995 and 1999, except for a four-month period in 1997.

A pilot pumping and monitoring program was undertaken in 1999 to determine the impacts of MPG transfer pumping on water users within the San Joaquin River Exchange Contractors Water Authority (SJREC) and Newhall Land and Farming Company (NLF) service areas. Extensive monitoring of pumpage, water levels, water quality, and compaction was initiated in 1999 and continues to the present. This led to a settlement agreement, that provided for continued MPG pumping, constrained by the results of monitoring and other factors.

Annual reports are prepared on the results of the monitoring. The results of monitoring have been used to revise the pumping program to mitigate adverse impacts. For example, pumpage from the lower aquifer has been limited, primarily due to drawdowns and land surface subsidence.

Migration of Poor Quality Groundwater

Water-level elevation contours for the upper aquifer (above the Corcoran Clay) were provided by KDSA (1997 and 2007). These maps indicate that groundwater enters the upper aquifer from up-

slope areas along virtually all the west and southwest boundaries of the Exchange Contractors service area. Certain areas west and southwest of the Exchange Contractors boundaries contain poor quality groundwater. The areas include 1) areas recharged by creeks south of Los Banos Creek and north of Panoche Creek, 2) the area southwest of Firebaugh-Mendota, and 3) the area south of Orestimba Creek.

Urban Groundwater Pumpage

Urban groundwater issues facing the Cities within the Exchange Contractors service area were summarized in KDSA (1997). In addition, cooperative groundwater studies have been done during the past two decades by the CCID and the Cities of Mendota, Los Banos, Gustine, and Newman. The Mendota study was completed in February 1999. Studies in Los Banos were completed in 1991 and updated in 1998. Studies in Gustine and Newman were completed in 1992 and updated in 2001. High manganese concentrations in well water have been a problem in Firebaugh and Mendota. High salinity water was also a problem in Mendota, prior to several years ago. As a result of the Mendota study (KDSA, 1999), the City developed a new well field in the mid-2000's, to mitigate water quality degradation coming from the area west of Mendota. The City of Dos Palos developed a surface water supply because of the poor chemical quality of the groundwater. In and near Los Banos, Newman, and Gustine,

groundwater of suitable quality for public supply has been developed through test hole exploration programs. However, a number of potential well sites have been found to be unsuitable. Plans are to update the Los Banos study within the next year.

ELEMENTS OF THE PLAN

The elements of the original plan were divided into two categories. Implementation of each of the elements proceeded concurrently.

Monitoring, Data Acquisition, and Evaluation

This element is subdivided into 1) regional activities, and 2) site specific (being done to address specific groundwater issues).

Regional Activities

Overall or regional activities to be conducted by the Exchange Contractors include the following.

Coordination with Other AB 3030 Groundwater Management Plan and Cooperation. The Central Valley Project agricultural contractors located upslope of the Exchange Contractors service area have developed two regional groundwater management plans through the San Luis and Delta-Mendota Water Authority (Stoddard & Associates, 1996 a and b). As part of these plans, Stoddard & Associates (1999 a and b) prepared associated groundwater monitoring plans. Both of

the management plans are being updated in 2007. In order to monitor the larger connected groundwater basin, future regional monitoring would include a coordinated data gathering effort with the upslope areas. In addition, Madera County is developing an Integrated Water Management Plan for the area downgradient of the Exchange Contractors service area. This plan focuses on overdraft in non-Districted areas. A program will be pursued such that the necessary study is accomplished and water-level measurements and water sampling results will be coordinated and gathered by each respective agency and shared.

Water Levels. Water-level elevation maps will be prepared approximately every five years. Data gaps in the existing monitoring plan were filled in accordance to the recommendations contained in the KDSA 1997 report. As part of the 2007 update by KDSA, a water-level elevation and direction of groundwater flow map was prepared for the upper aquifer for Spring 2006. Significant changes from previous maps were discussed in the text. Sufficient data were not available to prepare an updated map for the lower aquifer for the entire service area for 2006.

Water-level hydrographs were provided for a number of wells in the KDSA 1997 report. These were evaluated for the period 1962-89, which was considered a representative long-term period. As part of this plan update, the CCID updated many of these hydrographs. The

KDSA 2007 hydrogeologic report update contains a detailed discussion by subarea of the water-level trends for 1962-2005.

Aquifer Characteristics. The Exchange Contractors have continued to obtain specific capacity values from pump tests for wells within the Districts. As part of the updated plan, a specific capacity map was prepared by CCID for the mid-2000's, and this was presented in the 2007 hydrogeologic report update. Updated maps for specific capacities will be prepared about every five years.

Pumpage. Annual measurements and estimates of pumpage have been continued. Pumpage has been determined for each subarea, and divided into the upper aquifer, the lower aquifer, and composite (from both aquifers). Table 1 provided a pumpage update through 2006.

Subsidence. Three compaction recorders now being operated in the area. One is at Yearout Ranch, southeast of Mendota, which is operated by CCID, as part of the MPG monitoring program. A second is the Fordel recorder, adjacent to the Mendota Airport, which is operated by the MPG. The third is along the DMC near Russell Avenue, which is operated by the SL&DMWA. Information on the first two recorders is provided in the annual monitoring reports for the MPG program.

In addition, the Scripts Institute has established a con-

tinuous land surface elevation monitoring station (CORS) at a site about one mile southeast of Mendota. This monitoring will provide additional information on subsidence near Mendota.

Groundwater Quality. At least every five years, water samples are obtained from numerous selected wells for analysis of key constituents. Maps will be periodically prepared to show the geographic distribution of selected constituents in the upper and lower aquifers. As part of the 2007 update, an updated map of electrical conductivity was prepared. This map was generally similar to the previous map, and evidence was presented that indicated the northeasterly flow of poor quality groundwater has continued in the Mendota-Firebaugh area. As part of the 2007 update, water quality hydrographs were prepared for electrical conductivity of water from district supply wells and other selected wells. These hydrographs will be updated every several years in the future.

Site Specific Activities

These activities are to be accomplished in response to specific groundwater issues. Many of the activities will be accomplished cooperatively with other entities or made a requirement of pumping program.

Surface Water Transfers. For well water substitution transfer request the following hydrogeologic items will be required:

1. Locations and types of wells in vicinity, including domestic and stock wells.

2. Subsurface geologic conditions, extent of confinement, and possibly impacted aquifers. Existing sections could be used if they are near the proposed project and representative of conditions at the project site.

3. Depth to water, direction of groundwater flow, and any changes that would occur. Existing water-level maps and hydrographs are expected to be suitable in most cases. However in areas where data gaps are present water-level measurements and preparation of local maps are expected to be necessary.

4. Long-term water-level trends and the status of groundwater overdraft.

5. Aquifer characteristics.

6. Potential for land surface subsidence, particularly where groundwater is confined.

7. Overall water budgets (consumptive use versus recharge) for the pre-existing situation for the proposes project.

8. Groundwater quality, identification of problem constituents, and the potential migration of poor quality groundwater.

9. Subsurface drainage problems and the possible beneficial impacts of the proposed project.

10. Drawdown projections due to the proposed project.

11. A technical report by a certified hydrogeologist including supporting tables, illustrations, and appendices. The report will document pre-existing conditions and evaluate possible hydrogeologic impacts of the proposed transfer.

Pool Pumpers. A process is now in place to monitor the effects of MPG pumping in order to monitor potential impacts from future pumping and in cooperation and participation with other entities. As discussed previously, annual reports on the results of monitoring are prepared.

Delta-Mendota Canal Pumpers. In order to monitor potential impacts from future pumping the following monitoring is needed.

1. Annual water-level maps for each zone being pumped.

2. Continuous water-level recorders.

3. Annual pumpage.

4. Annual reports of the compaction recorder located at Russell Avenue.

5. Water quality maps prepared every five years.

6. Water-level and quality hydrographs.

Cities. Focused groundwater quality studies will be periodically performed. In the case of Mendota, Newman, Gustine, and Los Banos, this will require periodic updates of the joint studies previously accomplished. Firebaugh will require a new study. Attachment B contains a copy of the sample MOU to be utilized outlining the scope of work and subdivision of costs.

Migration of Poor Quality Groundwater. As compilation and analyses of regional monitoring activities identify areas or pockets of migration of poor quality groundwater, more focused monitoring in these areas may be needed. Case by case evaluation of risk to the groundwater will be made, and site specific monitoring will be developed as necessary.

Water Banking. There is potential for water banking in the Exchange Contractors service area, exclusive of FCWD and the Camp 13 Drainage District. Water banking could involve direct recharge in basins or stream channels, or in-lieu recharge. In-lieu recharge generally involves delivering water to users who would otherwise have pumped groundwater. When pumping is decreased, water levels tend to recover. Later, groundwater is pumped and delivered to the

banking partner(s). The in-lieu type of recharge has been practiced for years in the Semitropic WSD, and is particularly applicable in areas where subsurface geologic conditions aren't favorable for intentional recharge.

Areas considered to have potential for direct recharge include parts of the Columbia Canal Water Co., where depth to the shallow groundwater is generally more than about 30 feet. There are several areas along the west side of the CCID where direct recharge by basins or stream channels may be possible. Included are the fans of Los Banos Creek and Orestimba Creek, where permeable deposits are present, groundwater salinity is relatively low, and depth to water is adequate to allow recharge.

Hydrogeologic studies are necessary to better delineate the storage space available and to develop well recovery programs in target areas. Other potentially competing activities, such as gravel mining, need to be carefully addressed. In some areas, such as parts of the Columbia Canal Co. service area, depth to the shallowest groundwater is not well known. In such areas, exploratory borings can be used to evaluate potential restricting layers above the water level and the depth to groundwater. Pilot percolation tests are normally done, using relatively small basins, to determine probable long-term percolation rates for larger basins. Mounding calculations can be done, once the transmissivity of the

shallowest saturated deposits is known, to determine the water-level rise expected due to various amounts of recharge.

In-lieu recharge normally involves expanding District surface water delivery facilities to areas previously served by groundwater pumpage. The banking partners normally pay for these facilities and in wet years their excess water is delivered to farmers who then decrease their groundwater pumpage. When the banking partners need water returned, it is pumped from wells and delivered to the banking partners, or exchanges of surface water supplies can also be used.

Development of Drought Contingency Strategies

Drought contingency strategies are necessary during times when multiple critical water years occur, or when the USBR cannot provide delivery capacity flexibility during the seven moth period. An itemized list of drought period procedures will be developed and adopted. Such a list might include:

1. Reducing irrigation demand peaks through water ordering strategies.

2. Purchase of private well water and an associated emergency notification and purchase procedure.

3. Maximum pumping from drainage wells and tailwater return pumps.

4. Borrowing space and or water from other Exchange contractors.

5. Provide economic incentives for growers to pump wells not plumbed into the canal system.

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APPENDIX A

WATER TRANSFER INFORMATION

SAN JOAQUIN RIVER EXCHANGE CONTRACTORS WATER AUTHORITY WATER TRANSFER POLICY

Adopted April 7, 2000
Adopted Revised Policy November 1, 2002
Adopted Revised Policy August 5, 2005

1. Background.

1.1 The San Joaquin River Exchange Contractors Water Authority (SJRECWA) is a joint exercise of powers authority formed and existing under California law. Its member agencies are Central California Irrigation District, San Luis Canal Company, Firebaugh Canal Water District, and Columbia Canal Company. These four entities are traditionally referred to collectively as the Exchange Contractors.

1.2 The Exchange Contractors hold pre-1914 water rights on the San Joaquin River. In order to facilitate the construction of the Central Valley Project, the Exchange Contractors and their predecessors entered into two contracts with the United States Bureau of Reclamation in 1939. The Purchase Contract conveyed excess San Joaquin River flows—the so called "high flows"--and reserved the first San Joaquin River flows—sometimes referred to as the "low flows"--to the Exchange Contractors. The Exchange Contract established the terms pursuant to which a substitute supply of water was to be delivered by the Bureau of Reclamation to the Exchange Contractors in lieu of their "low flow" diversions from the San Joaquin River. These agreements established the underpinnings for the Bureau of Reclamation to construct Friant Dam on the upper San Joaquin River and divert the river's natural flow north to Madera and Chowchilla through the Madera Canal and south into Kern County through the Friant-Kern Canal. The Exchange Contract specifies that so long as the Exchange Contractors are provided a quantified substitute supply of water, the Exchange Contractors will not exercise their pre-1914 right to divert water from the San Joaquin River. The Exchange Contract at Article 5a contemplates that most, if not all, of this substitute water will be delivered to the Exchange Contractors from the Sacramento River watershed, pumped from the South Delta, and conveyed by means of the Delta-Mendota Canal. The current Exchange Contract is the Second Amended Contract for Exchange of Waters, Contract No. Ilr-1144, executed February 14, 1968.

1.3 The SJRECWA was formed in 1993 to represent its four member entities in many water matters including issues related to water transfers.

1.4 In California, the concept of water transfers, also referred to as water marketing or water brokering, is considered by some to be a partial solution to the shortage of water. The underlying assumption is that market forces in a free market will reallocate water. In some circumstances, agricultural water users who manage a conjunctive use water resource area can, to some extent, provide flexibility which may, at times, facilitate transfers of water. The Exchange Contractors proactively manage their surface water, groundwater, and conserved water conjunctively to maximize its beneficial use.

2. Objective. The objective of this water transfer policy is to manage water transfers to provide a framework by which the Exchange Contractors manage water transfers on a sound scientific basis, and to provide a clear set of standards and guidelines that each transfer proposal must comply with. The approach is designed to (i) ensure that the quantity of water proposed for transfer is made available through technically sound methods and projects which are scientifically based and verifiable; (ii) provide sound analysis of potential water transfer impacts; (iii) properly develop and implement necessary mitigations; (iv) monitor on-going water transfers and water development projects to ensure that beneficial and conjunctive use objectives are met; (v) provide flexible and efficient use of available water resources; (vi) ensure that the water supply, operations, and financial condition of the Exchange Contractors and their water users are not unreasonably impacted, and third party impacts from the transfer are mitigated; and, (vii) establish, maintain and utilize a data bank that will be used to manage the SJRECWA AB 3030 Groundwater Management Plan.

3. Authority

3.1 A transfer of water is considered a beneficial use under state and federal law. (Water Code Section 1011; CVPIA Section 3405.)

3.2 The Exchange Contractors hold pre-1914 rights to appropriate water from the San Joaquin River. The California Legislature has declared that it is established policy of the State to facilitate the voluntary transfer of water and water rights. (Water Code Section 109.) The Costa-Isenberg Water Transfer Act adopted by the legislature in 1986 as Water Code Sections 470 and 475-484 provides that voluntary water transfers between water users can result in a more efficient use of water, alleviate water shortages and finds and declares that it is in the public interest to conserve all available water resources. Water transfers do not undermine the rights that are the basis of the transfer. Water Code Sections 1010, 1011, 1011.5, 1244, 1440, 1731, 1737 and 1745.07 were specifically added to provide protection to water right holders who transfer water.

3.3 The Bureau of Reclamation utilizes the water transfer authority provided for in CVPIA to facilitate Exchange Contract water transfers. Water transfers implemented in accordance with CVPIA Section 3405(a) are deemed by federal law to be a beneficial use of water.

4. Applicability. Proposals to transfer any water from the Exchange Contractors' service area are subject to the requirements of this policy.

5. Definitions. For purposes of this policy, "water district" shall mean any water district, irrigation district, municipality, federal water agency, state water agency, or similar entity that exists pursuant to federal or state law.

6. Criteria for Water Transfers

6.1 Basis for all water transfers.

6.1.1 The state water rights, that are the underpinning of the Exchange Contract, are owned by the individual Exchange Contractors' members. The federal contract rights pursuant to the Exchange Contract are similarly owned by the individual Exchange Contractors' members. Consequently, any transfer of water from the Exchange Contractors' service area must first be approved by the Exchange Contractors' member entity from which the water will be transferred and then by the SJRECWA.

6.1.2 The Exchange Contractors' member entities share a water right in common, have a single water master who schedules water deliveries to the member entities, and have adopted a single groundwater management plan. The Exchange Contractors actively manage their surface water, groundwater and conserved water resources conjunctively, and manage water application within their service area to minimize drainage discharges from their service area and to cope with regulatory requirements imposed by law. Thus, all proposals to transfer water must be submitted by an Exchange Contractors' member entity and by the SJRECWA on behalf of its member entities, and water transfer proposals shall not be accepted from individual landowners. An individual landowner who proposes a water transfer must submit the proposal to the landowner's member entity, and, if approved by the member entity, shall be submitted by the member entity on behalf of the individual landowner.

6.1.3 It is imperative to protect the member entity's water rights and to assure that no water right is assigned; therefore, only annually severable water

transfers will be considered.

6.2 Water transfer types.

6.2.1 All water transfers shall be proposed by an Exchange Contractors' member entity. Additionally, the individual entities may propose a transfer jointly with any or all of the member entities. A transfer of water proposed jointly by all of the member entities shall be handled as a SJRECWA water transfer.

6.2.2 Therefore, transfer proposals are limited to three types:

6.2.2.1 A transfer of water by the SJRECWA on behalf of its four member entities.

6.2.2.2 A transfer of water by an Exchange Contractors' member entity to another water district.

6.2.2.3 A transfer of water by an Exchange Contractors' member entity to a water district that is made on behalf of an Exchange Contractors' landowner who is entitled to receive Exchange Contract water.

6.3 Water to be transferred. Water that is subject to transfer may be from an Exchange Contractors' member entity's water entitlement allocated pursuant to the Exchange Contract Division of Water Agreement, or from a member entity's non-allocated water supplies.

6.4 Generation of transferable water. Transferable water can be generated by using standard methods of conservation, groundwater substitution, or fallowing depending on the special hydrologic conditions that exist within the service area where the water is being generated as determined in paragraph 6.6.

6.5 Transferees. Water shall only be transferred to a water district.

6.6 Technical standards. All water transfers are subject to the technical standards and criteria adopted by the individual entity that proposes the transfer, and the SJRECWA. The technical standards are attached hereto as Appendices.

6.7 Priority of Transfers. All transfers are subject to the following priorities:

6.7.1 First priority shall be given to transfers initiated by the SJRECWA on behalf of its four member entities, and/or a transfer by an Exchange Contractors' member entity that enables an individual landowner within the member entity's service area to transfer water to a CVP ag service contracting water district for their own use in that water district.

6.7.2 Second priority shall be given to transfers initiated by an Exchange Contractors' member entity.

6.7.3 Third priority shall be given to transfers proposed by an Exchange Contractors' member entity on behalf of one of its landowners.

6.7.4 For illustrative purposes, the attached Appendix "A" provides an example of how the priority system would be implemented under the following three scenarios: 1) the transfer demands are less than the transfer supply during a normal water year; 2) the transfer demands are greater than the transfer supply during a normal water year; and, 3) a critical water year.

6.8 Limitation on Quantity of Water Transferred. Each year, a maximum shall be imposed on the quantity of water that can be transferred out of the Exchange Contractors' service area. The maximum shall be based upon a water budget developed in the Exchange Contractors' service area on a sub-basin by sub-basin basis. Each year, as soon as practicable, and not later than the Exchange Contractors' November board meeting, the maximum transfer quantity for the upcoming water year shall be announced. The announced maximum shall not be changed upward or downward from the announced maximum unless clear and convincing scientific evidence supports the change. Transfers initiated by SJRECWA will not be permitted in a critical water year designated under the Exchange Contract.

6.8.1 Internal Allocation of Transferable Water: On an annual basis, any Exchange Contractors' member entity may assign any portion of their maximum percent allocation to one or more of the Exchange Contractors' member entities and this assignment will increase the recipient Member Entity's share of transfers in the classifications stated below. The baseline for determining the Exchange Contractors' member's maximum percent allocation is the 1978 Division of Water Agreement subject to modifications pursuant to Sections 6.8.2.1 and 6.8.2.2.

6.8.2 Transfers will be classified as: (i) conservation or groundwater

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6.8 Limitation on Quantity of Water Transferred. Each year, a maximum shall be imposed on the quantity of water that can be transferred out of the Exchange Contractors' service area. The maximum shall be based upon a water budget developed in the Exchange Contractors' service area on a sub-basin by sub-basin basis. Each year, as soon as practicable, and not later than the Exchange Contractors' November board meeting, the maximum transfer quantity for the upcoming water year shall be announced. The announced maximum shall not be changed upward or downward from the announced maximum unless clear and convincing scientific evidence supports the change. Transfers initiated by SJRECWA will not be permitted in a critical water year designated under the Exchange Contract.

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6.8.2 Transfers will be classified as: (i) conservation or groundwater

transfers (80,000 AF maximum) or (ii) fallowing transfers (50,000 AF maximum). The income from each classification of transfer will be blended and distributed to the member entities in proportion to the amount of water contributed by each entity.

6.8.2.1 In regard to transfers based upon conservation or groundwater pumping, if a member entity elects not to utilize its share of the allocation or elects not to assign to another member entity a portion of its allocation, the unutilized portion of the allocation shall be made available to the other member entities in proportion to the Exchange Contractors' 1978 Division of Water Agreement.

6.8.2.2 In regard to fallowing transfers, if a member entity elects not to utilize their full allocation and elects not to assign their unused allocation to another member entity, that portion of the allocation of fallowing-based transfers shall not be allocated to other member entities for transfer.

6.9 Annual Establishment of Transferees and Maximum Quantities of Water to be Transferred to Each Transferee. Each year by no later than October 31st, the SJRECWA shall establish the transferees and maximum quantities of water to be transferred to each transferee. The water needed to meet these obligations will be in accordance with the transfer priorities established by Section 6.7.

6.10 Water Transfer Committee.

6.10.1 A SJRECWA Water Transfer Committee is established to review all transfer proposals that are submitted consistent with this policy. It will review and analyze the technical data upon which each transfer is based, and make a recommendation on each water transfer proposed. The membership of the committee will include the manager of each of the Exchange Contractors' member entities, and two members of the SJRECWA governing board, or a member's alternate, appointed by the President of the board. The committee may retain technical consultants.

6.10.2 The committee shall review each transfer proposal, and each approved transfer annually, to ensure that it meets the stated objectives, technical standards, and criteria of this policy.

6.10.3 Due to the fact that the Exchange Contractors and their landowners conjunctively use surface and groundwater resources, where a water transfer is proposed from lands that the committee believes will not participate fully in the conjunctive use program, the committee may limit a water transfer to the amount of groundwater used by the lands initiating the transfer so that those lands do not exceed annually their fair share of the safe yield.

6.10.4 The committee shall review each transfer proposal, and each approved transfer annually, to consider whether it is likely to cause unreasonable impacts to the overall water supply, water management operations, or financial condition of the transferor entity or its water users, and whether member entity impacts that result from the transfer will likely be mitigated.

6.10.5 The committee shall make a recommendation to the SJRECWA Board of Directors on each proposed transfer, and an annual recommendation for the continuation or termination of each approved transfer, based upon analysis of technical criteria developed pursuant to paragraph 6.6.

6.11 Water Transfer Fees, Mitigation Costs, and Water Transfer Proceeds.

6.11.1 Where a transfer is made by a SJRECWA member entity, the entity will allocate a portion of the income from the water transfer to conservation projects and/or water distribution and drainage facilities, or other similar projects and actions that benefit its water users.

6.11.2 Any Bureau of Reclamation, or state agency water transfer application and environmental assessment fee shall be the responsibility of the transferring entity.

6.11.3 The processing by SJRECWA of a water transfer will require the payment by the transferring entity of all costs associated with the transfer. Such cost shall include but not be limited to management and study costs associated with administration of the Transfer Policy. For example, where a transfer involves groundwater, the transferring entity will be responsible for the cost (i) to determine safe annual yield of groundwater, (ii) for monitoring required to analyze groundwater conditions both in terms of quantity and quality, (iii) the amount of applied water that recharges the groundwater or enters drainage systems, and (iv) to study and monitor for subsidence impacts.

6.11.4 The SJRECWA shall be the fiscal agent for all water transfers.

6.12 Environmental Requirements. The environmental review requirements of NEPA and CEQA must be complied with before the Exchange Contractors will process a transfer application and all such costs shall be born by the transferring member entity.

6.13 Public Hearing. The Exchange Contractors may conduct a public hearing to determine the impact of the proposed transfer. The transferor and transferee must attend the hearing if requested to do so by the Exchange Contractors or by the entity from which the transferor is entitled to receive water.

6.14 Action by SJRECWA Board of Directors. All water transfers must be approved by unanimous vote of the SJRECWA Board of Directors. A water transfer proposal along with the recommendation by the Water Transfer Committee will be considered by the SJRECWA Board of Directors, and the transfer approved, disapproved, or returned to the Water Transfer Committee for further action as directed by the Board.

APPENDIX "A"

Illustration of Transfer Policy Priority System

Annually the SJRECWA shall establish:

1. Annual Maximum – The maximum annual amount of water to be transferred from the SJRECWA developed on a sub-basin by sub-basin level.(section 6.8).

2. Demand – The maximum quantities of water to be transferred to each transferee shall be established by no later than October 31st of each year. (section 6.9).

3. SJRECWA Supply – The amount of water available under a SJRECWA transfer and/or a transfer by an Exchange Contractors' member entity that enables an individual landowner within the member entity's service area to transfer water to a CVP ag service contracting water district for their own use in that water district. First priority. (section 6.7.1).

4. Individual Entity Supply – The amount of water available under an individual entity transfer. Second priority. (section 6.7.2) .

5. Individual Entity on behalf of landowner supply – The amount of water available for an entity on behalf of a landowner, limited by the maximum demand. Third priority. (6.7.3)

The application of the priority system described in section 6.7 is limited to determining quantities of transfer demand to be met by each of water transfer types. It will be calculated as follows (section 6.9):

	TOTAL DEMAND
Less	***Amount available through SJRECWA initiated and/or Exchange Contractors' member entity that enables an individual within the member entity's service area to transfer water to a CVP ag service contracting water district for their own use in that water district (priority 1)***
Equals	***Amount available for priority 2 and priority 3***
Then	***Amount available through priority 2 and priority 3***
Less	***The amount of water available under an individual entity transfer (priority 2)***
Equals	***Amount available through priority 3***

Individual landowners will be notified of the amount of transfer demand available to be met by the third priority. They will be required to determine their level of participation (through fallowing as an example) as soon as possible.

To further illustrate the priorities, below are three types of water year scenarios:

NORMAL YEAR

100 % allocation to EC; demand is 95,000 af which exceeds Supply

Priority		Supply	Demand	Amount Transferred
1	SJRECWA/ dist. to dist. initiated	75,000	85,000	75,000
2	Exchange Contractor Entity Initiated	5,000	5,000	5,000
3	Exchange Contractor Entity Initiated on behalf of Individual	5,000	5,000	5,000
		85,000	95,000	85,000

Total amount transferred 85,000

NORMAL YEAR

100 % allocation to EC; demand is 65,000 af and is less than Supply

Priority		Supply	Demand	Amount Transferred
1	SJRECWA/ dist. to dist. initiated	75,000	65,000	65,000
2	Exchange Contractor Entity Initiated	5,000	0	0
3	Exchange Contractor Entity Initiated on behalf of Individual	5,000	0	0
		85,000	65,000	65,000

Total amount transferred 65,000 af

CRITICAL YEAR

75 % allocation to EC; demand is 25,000 af and is greater than Supply

Priority		Supply	Demand	Amount Transferred
1	SJRECWA/ dist. to dist. initiated	0	0	0
2	Exchange Contractor Entity Initiated	0	0	0
3	Exchange Contractor Entity Initiated on behalf of Individual	5,000	25,000	5,000
		5,000	25,000	5,000

Total amount transferred 5,000 af

CENTRAL CALIFORNIA IRRIGATION DISTRICT

WATER TRANSFER POLICY

Adopted: October 27, 1993
Revised: October 26, 2007

I. Transfers by Landowners within CCID:

The Central California Irrigation District ("District") under its Exchange Contract, with permission of the Bureau of Reclamation, will permit water transfers. Water to be transferred may be from individual allotment or non-allocated District supply.

a. The District will permit transfer of water from a Landowner within the District only to his or her owned land in another Recipient District.

b. "Landowner" shall mean the owner of the right through deeds or contracts of sale to possession of the property for farming purposes which contract must provide the right to control and utilize on the land the surface water provided by CCID upon that land. A lessee, regardless of the term of the lease, is not a Landowner for purposes of this policy, nor is a lessee who holds an option to purchase considered a Landowner for the purposes of this policy. The holder of a life estate entitling the person to possession and use of the land and the surface water provided by CCID upon that land shall be deemed a Landowner. If the land is owned by a corporation, trust, partnership, or other form of business entity, provided all other owners of that business entity consent in writing, a person holding an undivided interest may to the extent of that proportional interest be considered a Landowner of that percentage of the acreage, provided that the proposed land to receive the transfer is the same person or an entity holding title in which that individual holds a similar percentage interest. The parents or natural or adopted children or grandchildren of a Landowner will be treated as identical with the Landowner for the purposes of transfers because these ownership differences often arise from estate planning, governmental entitlement or similar requirements. A person who does not own that interest in land within CCID, and in addition, the interest in the land to which the water is to be transferred for at least one (1) calendar year prior to January 1 of the year in which the transfer is proposed to occur shall not be permitted to transfer water under the District programs until that ownership period has been complied with. If a Landowner owns the In-District land on January 1 of the year in which the transfer is proposed and the Landowner was the tenant upon the property in the previous full year and held a written option to purchase, the Landowner shall be treated as complying with this requirement. The District will not approve a transfer between entities of the Landowner's proportion of the surface water otherwise transferable unless all of the other holders of proportional interests of both the transferring land and the recipient land agree to be parties to the contract indemnifying, defending and holding the District harmless from any claims.

c. A "Recipient District" is (i) a district or mutual water company within the geographical area described in the Ten-Year Transfer Approval CEQA/NEPA process conducted by the San Joaquin River Exchange Contractors Water Authority (SJRECWA) and Bureau of Reclamation, (ii) a District or mutual water company overlying the same groundwater basin which is adjacent to CCID and which through direct connection well water can be delivered, and (iii) which district or mutual water company agrees in writing to comply with the terms and conditions of the transfer.

II. Types of Transfers:

CCID transfers conserved water for the benefit of all CCID Landowners. In addition, there are two (2) types of transfers possible involving individual Landowners:

a. CCID District Conservation Transfers: Conservation of irrigation water is a duty of all Landowners. Water conserved is transferred through District programs and the benefits of the transfer are shared by all District Landowners and water users. To the extent that CCID believes that through conservation and other means available the District will have water available that may be transferred from non-allocated supplies, the District may provide for that water to be transferred. The proceeds of those transfers will be utilized by the District in accordance with its policies regarding conservation loans and grants, payments of project costs, and disbursement of portions of the District water charges to growers and Landowners.

b. Transfer of Water Generated from Well Pumping: A Landowner who has a well upon his or her owned land may transfer by a credit well water pumped into a District owned or controlled facility, up to 3.0 acre-feet per acre for lands owned by that same Landowner in a Recipient District for use on land overlying the same groundwater basin. See "Rules Governing Pumping of Private Wells for Water Credits in Other Districts" for more details and requirements, including means of assuring water pumped will not harm other groundwater or surface water users. The water may be transferred to the Recipient District for use only on the Landowner's owned lands.

c. Transfer of Water Generated from Land Fallowing: A Landowner who wishes to fallow a specified portion of his or her land within CCID may apply to CCID to provide for the transfer of the amount of water that would be consumptively used upon those fallowed lands to lands owned by the same Landowner located in a Recipient District; provided the Landowner meets the requirements of the District's policy and its program, the water may be transferred to the Recipient District for use only on the Landowner's owned lands. The Landowner must comply with the District requirements of the program. See "Rules Governing Fallowing of CCID Land for Water Credit in Other Districts."

III. Conditions of Transfers:

The District shall strive to manage water transfers so that the water supply, operations, and financial condition of the District, the Exchange Contractors, and water users within the Exchange Contract service area are not unreasonably impacted. Before the District will consider a Landowner's written water transfer proposal to be complete, the Landowner will need to demonstrate:

(1) that the transfer does not unreasonably impact:

a. the quantity and quality of the water supply available to the District and its water users;
b. the quantity and quality of groundwater in the District and the Exchange Contract service area, or interrelated surface streams, or other groundwater supplies within the District and Exchange Contract service area;
c. the District's operations, including, but not limited to the ability of the District to meet its delivery obligations, obtain additional water supplies, and undertake conservation measures, exchanges, transfers, groundwater storage, or conjunctive use programs;
d. the District's financial condition and its cost of providing water service to its water users;
e. the appropriate maintenance practices regarding the fallowed land, if the proposal is to fallow lands;
f. the ability of the District or its water users to provide drainage to land including the ability to meet regulatory requirements relating to discharge of agricultural drainage; and
g. other relevant factors that may create an adverse financial, operations, or water supply impact on the District or its water users.

(2) that the Landowner has paid or made acceptable arrangements to pay, all costs associated with developing a complete written water transfer proposal, including District staff and attorney review necessary to process the transfer proposal.

(3) that the Landowner has paid, or made acceptable arrangements to pay, all necessary mitigation costs associated with the transfer including without limitation:

a. Studies to determine safe annual yield of groundwater, if the proposal is to pump groundwater and deliver that groundwater to the District for credit.
b. Monitoring and quantifying groundwater conditions both in terms of quantity and quality.
c. Funds to study and determine the amount of applied water which recharges the groundwater or enters drainage systems.
d. Funds to study and monitor for subsidence impacts.
e. Funds to study and monitor for fallowing impacts and guarantee that fallowing will not impact other growers and Landowners within the District and will not result in permanent abandonment of irrigation upon the fallowed lands.
f. Landowners requesting transfers based on groundwater pumping will be required to pay all costs of monitoring and quantifying groundwater conditions both in terms of quantity and quality. If it is discovered that detrimental quantity or quality conditions require a reduction in pumping amounts, the Landowner will be required to reduce, or curtail, pumpage of groundwater to protect both quality and quantity.

g. A Landowner proposing to fallow shall provide the monies to study and determine the amount of applied water which enters drainage systems which can be used by District or other Exchange Contractors.

(4) that the Landowner has paid, or made acceptable arrangements to pay, District water transfer conservation fees.

IV. Documentation and Quantities of Transfers.

1. All transfers which an individual Landowner wishes to make must be presented to the District for processing and processed only through the District utilizing the device of a written contract between the District and the Landowner (including the signature of all holders of interest in the land and the signature of any deed of trust holders or other secured parties upon the land or improvements, if necessary, which determination will be the Landowner's responsibility). The District will enter into a corresponding agreement with the Recipient District if the conditions of CCID are met regarding the transfer.

2. For fallowed land transfers the total water to be transferred by a Landowner shall not exceed the lesser of: (i) the water generated from fallowing 20% of the Landowner's total ownership within the District, or (ii) that quantity of water which is a Landowner's allocated share of the maximum amount of water which may be transferred through Landowner to the same Landowner fallowing program in a calendar year pursuant to restrictions enacted by the Exchange Contractors, CEQA and NEPA documents, or regulatory requirements such as the Bureau of Reclamation requirements, or (iii) that quantity of water which the District determines can be safely transferred without adversely impacting the quantity and quality of the water supply available to the District and its water users, including the quantity and quality of groundwater, whichever amount is less. The total water to be transferred shall be computed after subtracting from the total delivered water all transportation, evaporation, seepage, metering or measurement error and any amounts necessary to provide for agreements with other Exchange Contractors to relax monthly delivery limitations or similar agreements with other parties such as Grassland Water District, Department of Fish and Game, United States Fish and Wildlife Service, and the Bureau of Reclamation, and the total amount of water applied which is calculated to have historically entered the underground basins directly or indirectly through relaxation of well use.

   a. The District may elect not to apply the 20% limitation or may apply different limitations to a Landowner if the District determines that the land seeking to transfer water creates severe drainage quality conditions. Land with those conditions, proposed to be fallowed, may be provided a priority in participation in transfers.

   b. If District transfers together with Landowner-requested transfers exceed 20% of the water to be applied in the District, or such lesser amount that the District determines can be safely transferred without adverse impacts on the quantity and quality of the water supply available to the District and its water users including

the quantity and quality of groundwater or because of the limitations set forth in Paragraph 2 above, District may proportionately reduce, or curtail, the Landowner-requested transfers with consideration of whether drainage impacted lands should be entitled to any priority, to a level at which no more than 20% of the District consumed surface water as described in Paragraph 2 will be transferred.

3. Because the District Landowners conjunctively use groundwater replacing surface water for groundwater and storing groundwater for drought periods, and because the lands from which a fallowing or groundwater transfer is proposed will not participate fully in that conjunctive use program, the amounts of groundwater used by the lands initiating a transfer cannot exceed annually their fair share of the safe yield, assuming all other Landowners used their fair share of the safe yield. This will allow storage for drought periods by all lands overlying the basin or area. If the studies for such determination of safe annual yield do not exist, Landowners initiating transfers will be required to fund those studies by the District upon an equitable basis before a transfer may be processed. The equitable terms may include reimbursement of a portion of the costs of studies by other transferring Landowners who enjoy the use of the studies.

4. The District has adopted a policy entitled "Central California Irrigation District Rules Governing Pumping of Private Wells for Water Credits in Other Districts." A Landowner proposing to pump groundwater for credit in other Districts is directed to that policy for more specific conditions and requirements and that policy is incorporated herein as if set forth in full. The District has adopted a policy entitled "Central California Irrigation District Rules Governing Fallowing of CCID Land for Water Credit in Other Districts." Landowners are directed to that policy for more specific conditions and requirements, and that policy is incorporated herein as if set forth in full.

V. Recipient District Conditions and Requirements.

In order to avoid unreasonable impacts on the water supply, operations, and financial condition of the District and its water users, the District will not approve a water transfer proposal unless:

1. The Recipient District conducts a water conservation program that includes efficient water management practices, or is in compliance with an urban water management plan under Water Code Section 10610 et seq., or an agricultural water management plan adopted pursuant to Water Code Section 10800 et seq.; and

2. The Recipient District conducts a drainage program which assures that the water transfer will not cause a deleterious effect on lands downslope from any lands irrigated as a result of the transfer; and

3. The Landowner receiving the transferred water and the Recipient District demonstrate that the Landowner will not be dependent upon the transferred water supply at the end of the one (1) year term of the proposed transfer.

4. Transfers shall be submitted and approved only on a one-year basis by the District. The District has adopted a technical standard entitled "Maximum Quantity of Water Transferable from CCID Due to Fallowing," a copy of which is attached hereto and incorporated herein as if set forth in full. Fallowing transfers involve complex requirements and interrelationships between the San Joaquin River Exchange Contractors Water Authority, Bureau of Reclamation and CCID policies. Frequent changes in the policy should be anticipated by Landowners. CCID cannot guarantee that requirements will not change during a calendar year, but new requirements will not apply retroactively to fallowing transfers already approved by the Board of Directors of the District for that year.

V. District Hearings and Process.

1. The District staff will review each transfer in order to determine the impact of the proposed transfer on the water supply, groundwater, operations, and financial conditions of the District and its water users. A Landowner requesting a transfer will be required to deposit from time to time the amounts estimated to be expended in that review.

2. The District may conduct a public hearing to determine the impact of the proposed transfer. The Landowner and Recipient District shall attend the hearing if requested to do so by the District in order to respond to questions and comments regarding the impact of proposed water transfers.

3. If land use ordinances, general plan or other zoning conditions require the acquisition of use permits from the County, the necessary permits must be acquired prior to a Landowner's participation in such a transfer. All CEQA/NEPA requirements imposed by law in connection with that process shall be the responsibility of the Landowner, except that the District shall be the lead agency for CEQA purposes. The District must be consulted as an interested agency in any process in which the District is not the Lead Agency.

4. All NEPA requirements of the Bureau of Reclamation or any other federal agency shall also be complied with before the District processes the Landowner's application. To provide for the most rapid compliance with CEQA/NEPA requirements, the Landowner shall fund a cooperative joint EIR/EIS process with the County (if there are applicable land use permits required) together with the United States lead agency. If the County does not have land use jurisdiction, the District will be the lead agency for CEQA purposes and the Landowner will pay the cost of compliance by the District.

5. District transfers, including Landowner requests, shall be monitored at least annually and will be subject to modification, including restrictions or termination, in response to:

    a. Changes in applicable laws, regulations, contracts and court decisions.

    b. Changed or adverse environmental impacts or other circumstances that cause a transfer to result in impacts on the water supply, groundwater, operations, or

financial conditions of the District or its water users, or adjacent areas dependent directly or indirectly on District supply.

c. Restrictions or prohibitions by the USBR or other agencies exercising jurisdiction over any phase of the transfer.

6. The District will adopt a use fee schedule for processing these transfers. If it does so, the District will use fees from water transfers for conservation projects and rehabilitating District facilities for the benefit of its water users. The District will develop a use fee, or schedule of fees, as it determines appropriate, that will be levied by the District on all water transferred. Fees will be in the nature of a water conservation use fee and the District will use its share of the income from such fees for conservation projects within the District and for the rehabilitation of District facilities to reduce conveyance losses. It is the goal of the District, in implementing this policy, to ensure that revenues of the District generated by transfers are used for the improvement of its system and the improved management of its water supplies in order to ensure that the transfer can be sustained without adverse impact on District surface water and/or groundwater supplies. The use fee will be established by evaluating short and long term conservation and water management programs within the District that should be implemented and the cost of such programs. Fees shall be paid prior to the time the transfer is initiated or at such periodic times as is determined appropriate by the District in the case of long-term transfers.

7. The contract between the District and the Landowner shall provide for payment of all costs, expenses, water tolls, assessments, and all additional costs and expenses incurred by the District for consultants, staff, Board operations, and dislocations or reductions in economies of scale arising from the transfer. The Landowner shall be required to continue to pay all PMA and community ditch charges and similar operation, maintenance, repair and reconstruction costs necessary to avoid increased burdens upon neighboring Landowners not participating in transfers. These charges and expenses, including the costs of monitoring and enforcing these conditions of transfers, shall be adjusted and calculated from time to time by the District and if not paid, the Landowner-requested transfer shall not be permitted to continue.

8. The contract will provide, among other terms, for a requirement that any fallowed land be maintained at the cost of the Landowner in a condition that noxious weeds and pests are not permitted to be maintained upon the fallowed land, all air pollution requirements for suppression of dust and blowing objects are complied with, and the land is maintained in a condition in which the land may be returned to irrigated farming in the following water year, including maintenance of any facilities required for that use.

9. Included within the reimbursable costs to be paid by Landowner will be calculated value of power generation lost at the power plants located on the District's system by virtue of any water transferred which is not available for hydroelectric generation. Power costs will be estimated based on reasonable models of scheduled generation applied to then existing published power values.

10. The rules and regulations of the District will include a term that a Landowner-requested transfer which is not processed through the District in accordance with these policies and which is accomplished shall nevertheless be subject to each and every term and condition of these policies. Until the terms and conditions of these policies are substantially complied with, the Landowner shall be in violation of the District rules and regulations and will not be delivered water upon the lands from which the transfer is made or any other lands which the Landowner had an interest in upon the date of the transfer. The Landowner shall be provided a hearing prior to the imposition of the bar upon water service and if the District can set fees and charges which will compensate for the impacts upon the District system and water use within the District system, those fees and charges will be levied annually as a condition of water service rather than the prohibition upon water service.

11. Certain lands within the District are not eligible for fallowing or well water transfer programs. Those include lands which have converted from Second Class to Primary Use status and ten (10) years has not elapsed since that conversion.

CENTRAL CALIFORNIA IRRIGATION DISTRICT
RULES GOVERNING FALLOWING OF CCID LAND
FOR WATER CREDIT IN OTHER DISTRICTS

Adopted October 26, 2007

These Rules are a part of the Central California Irrigation District Water Transfer Policy. Reference to that Policy will be made in interpreting and applying these Rules related to proposals for transfer of water through fallowing of lands.

I. Eligibility for Fallowing Transfers.

1.0 Central California Irrigation District receives its surface water supplies from the Bureau of Reclamation pursuant to the Exchange Contract. The terms of the Exchange Contract limit the quantity of surface water delivered in accordance with a five-month/seven-month schedule, and further limit the monthly quantity of water so delivered. In addition, capacity limitations are provided upon delivery from the Bureau of Reclamation of the water rights water of the District.

1.1 Proposals to fallow land within CCID for credits of an amount of water in other Districts is contemplated within the Central Valley Project Improvement Act and may be arranged but requires the adoption of policies and practices. When fallowing is proposed for credits in certain water irrigation or Mutual Water Companies ("Recipient District") in which the Landowner proposing the fallowing owns the land upon which the water is proposed to be utilized as a result of the transfer, the Landowner shall comply with these Rules and policy.

1.2 Fallowing transfers may occur only from the Landowner who owns the fallowed land within CCID to land owned by that same Landowner within a Recipient District. As used herein, the word "Landowner" shall mean the owner of the right through deeds or contracts of sale to possession of property for farming purposes, which contract or deed must provide the right to control and utilize on the land the surface water provided by CCID upon that land. A lessee, regardless of the term of the lease, is not a Landowner for purposes of this policy, nor is a lessee who holds an option to purchase considered a Landowner for the purposes of this policy. The holder of a life estate entitling the person to possession and use of the land and the surface water provided by CCID upon that land shall be deemed a Landowner. For land either proposed to be fallowed or the land to which the water is to be transferred, the Landowner must obtain the written approval by the Lessee of those lands.

1.3 If the land is owned by a corporation, trust, partnership, or other form of business entity, provided all other owners of that business entity or beneficiaries consent in writing, a person holding an undivided interest may to the extent of that proportional interest be considered a Landowner of that percentage of the acreage, provided that the proposed land to receive the transfer is the same person or an entity holding title in which that individual holds a similar percentage interest. The District will not approve a transfer between entities of the Landowner's proportion of the surface water otherwise transferable unless all of the other holders of proportional interest of both the transferring land and the recipient land agree to be parties to the contract indemnifying, defending and holding the District harmless from any claim.

1.4 The parents or natural or adopted children or grandchildren of a Landowner will be treated as identical with the Landowner for the purposes of transfers because these ownership differences often arise from estate planning, governmental entitlement or similar requirements.

1.5 A person who does not own that interest in land within CCID, and in addition, the interest in land to which the water is to be transferred, for at least one (1) calendar year prior to January 1 of the year in which the transfer is proposed to occur, shall not be permitted to transfer water under the District programs until that ownership qualification period has been complied with.

II. Technical requirements relating to amounts of water which may be transferred under land fallowing proposal:

2.0 The technical requirements for a fallowing proposal and the limitations upon the amounts of water which may be transferred are as follows:

Land Fallowing
Technical Standards and Guidelines

2.1. **Maximum Quantity of Transferable Water**

2.1.1. The maximum quantity of water (Max Transferable) that can be transferred by a Landowner fallowing land is the *lesser of the monthly Consumptive Use of the crop being fallowed or the CCID Deliverable Monthly Entitlement.* (Subject to Adjustments within paragraph 2.4.)

2.2. **Consumptive Use**

2.2.1. The consumptive use will be calculated using the average of the crops grown on the land for the past three normal water years.

2.2.2. Consumptive Use (CU) = Evapotranspiration Crop (ETc) + Required Leaching Fraction (LF) – Effective Precipitation (EP).

2.2.2.1. $CU = ETc + LF - EP$

2.2.3. Etc is calculated on a monthly time step for the calendar year. Data on the baseline three year average ETo and rainfall is collected from the nearest CIMIS station(s). The crop coefficients (Kc) are taken from the SWRCB report # 84-1.

2.2.4. LF is calculated based on the methodology outlined in the Western Fertilizer Handbook.

2.2.5. EP is 50% of the three year average rainfall measured at the nearest CIMIS station(s).

2.2.6 . No crops may be grown on the fallowed lands at any time during the calendar year during which the fallowing transfer will take place. Lands on which sugar beets were planted prior to December 31, 2007 for harvest in 2008 shall be eligible for a transfer in 2008 provided that no irrigation water from any source is applied after January 1, 2008. Crops which are normally harvested in the preceding calendar year which are delayed in harvesting by weather or other factors beyond the control of the Landowner until after January 1, shall not be excluded from eligibility for a potential transfer but the circumstances shall be brought to the Board of Directors for approval or disapproval on an individual basis prior to eligibility being determined for the fallowing program.

2.3. CCID Deliverable Monthly Entitlement

2.3.1. The deliverable monthly entitlement is that quantity of Exchange Contract Water, on average, (not other water such as well water) that can be delivered to farmed fields within the entity.

2.3.2. The deliverable monthly entitlement is calculated on a per acre basis.

2.3.2.1. The deliverable monthly quantities are the Division of Waters Agreement quantities less system losses and other commitments divided by total entity acreage.

2.4. Adjustments

2.4.1. The deliverable monthly entitlement may be accumulated (bath tubbed) for the 7 month period so long as the bath tub is being provided by Reclamation in accordance with the Refuge Water Transportation Agreement.

2.5. Determination of Acreage of Fallowed Land

2.5.1. Acreage of Fallowed land will be based on farmed acres not assessed acreage. Each field that is fallowed must be contiguous unto itself.

2.5.2. The following are acceptable methods for determining farmed acreage:

2.5.2.1. CCID Field Map acreage;
2.5.2.2. Measurements based on aerial photography;
2.5.2.3. Field measurements; and
2.5.2.4. Equivalent methods approved by the transfer committee.

2.5.3. To the extent possible, whole fields will be fallowed.

2.5.4. If only a portion of a field is to be fallowed then the fallowed portion must be physically separated from the farmed field by levee or drain. (It is important that no water of any kind be applied to the fallowed land.)

III. Fallowing Transfers – Quantity Limitations.

3.0 Fallowing transfers, in addition to the amounts and limits provided in the Technical Standards above, will be further limited to no more than the water generated from fallowing 20% of the Landowner's total ownership within the District. If a Landowner owns only a percentage interest in a parcel or parcels of land, not more than 20% of that Landowner's percentage of those parcels may be subscribed in the fallowing program.

3.1 The above amount shall be limited by CEQA/NEPA documents, regulatory approval by the Bureau of Reclamation, and restrictions enacted by the Exchange Contractors. A Landowner should not presume that the full 20% of that Landowner's owned land or share of owned land proposed to be transferred will be transferable in any year.

4.0 The Landowner will be required to pay the cost of the studies, tests and monitoring to determine the amounts of water which can be safely transferred pursuant to a fallowing proposal and which will not impact, directly or indirectly, other users within the District through reduction of groundwater recharge, operational changes, or drainage quality conditions. Landowners seeking to transfer water pursuant to a fallowing proposal in which severe drainage quality conditions exist may be provided priority in regard to fallowing transfers and may be subject to further conditions and limitations, including installation of improvements upon the land to provide increased water conservation upon the fallowed land.

5.0 Land proposed to be fallowed shall further be subject to restrictions in regard to the care of the land during each year it is fallowed to restrict noxious weeds, to comply with air pollution requirements, and to avoid dust or similar detrimental conditions to neighboring land.

6.0 The Landowner proposing a fallowing transfer will be required to demonstrate that at the end of the term of the proposed transfer (one year), the land upon which the water is to be utilized in the Recipient District will be not be dependent upon further transfers.

IV. Documentation.

7.0 The Recipient District must conduct a Water Conservation Program that includes water efficient management practices pursuant to Water Code Section 10800, and must conduct a drainage program which, in the sole determination of CCID, assures that the water transfer will not cause a deleterious effect downslope from any lands irrigated as a result of the transfer.

8.0 The Landowner in the form of an Agreement must hold the District free and harmless against claims for damages arising either because of the fallowing of the land within CCID or the receipt of water upon the lands within the Recipient District pursuant to the transfer and any conditions or problems of any nature or kind that may arise or be related to the transfer. The Recipient District must execute an agreement providing for the transfer and agreeing to limit the use of the water transferred to the lands owned by the Landowner and not to permit, directly or indirectly, the transfer of the Recipient District allocation from those lands or the water transferred from CCID to other lands within the Recipient District or other Districts. The object of the Fallowing Program is to provide for interim relief and not to permit speculation with the water value or direct monetary gain through water marketing.

9.0 Lands which are annexed to CCID are subject to a rule that for ten (10) subsequent years, no water may be transferred. That rule will continue to apply and takes precedence over this policy as to such annexed lands.

10.0 The District fee schedule for investigating, determining the conditions of, and monitoring fallowing transfers shall be established from time to time. The Landowner shall deposit the amounts and supplement those deposits when notified by the District that the original deposit has been exhausted.

11.0 The District (or its designee) will be the lead agency for all CEQA, NEPA and Bureau of Reclamation processes.

12.0 The Landowner shall pay all costs of those processes. If any use permit or similar permits are required from the County in which the CCID land is located or from the County in which the land to receive the transfer of water is located, the Landowner is required to comply with those requirements and obtain the necessary permits before the Landowner will be permitted to participate in a fallowing transfer. The District will be the lead agency for CEQA purposes in those County processes. Landowners should not anticipate or depend upon fallowing transfers being approved prior to the final action and approval by the Bureau of Reclamation, the Recipient District, the Counties if they have jurisdiction or ordinance requirements, and finally, the CCID Board of Directors. Landowners are warned that the process of review and approval of transfers of this nature can take an extensive period of time. The District will have no liability if a Landowner has no other options or means of providing sufficient water to the lands proposed to receive the transfer. The transfer will be credited to the Recipient District in accordance with CCID's estimate of the periods within which water would have been used upon the CCID fallowed land. It is up to the Landowner proposing the transfer to work out, if possible with the Recipient District, the utilization of those credits within the Recipient District. In some cases, the transfer from CCID will not permit the early irrigation of the lands within the Recipient District in accordance with the schedule of actual irrigation. It is up to the Landowner to work with the Recipient District to try to accommodate that difficulty.

CENTRAL CALIFORNIA IRRIGATION DISTRICT

RULES GOVERNING PUMPING OF PRIVATE WELLS

FOR WATER CREDITS IN OTHER DISTRICTS

Adopted: February 24, 1993
Revised: October 26, 2007

These Rules are a part of the Central California Irrigation District Water Transfer Policy. Reference to that Policy will be made in interpreting and applying these Rules related to proposals for pumping of private wells for credit in other Districts.

CCID receives its surface water supplies from the Bureau of Reclamation pursuant to the Exchange Contract. The terms of the Exchange Contract limit the quantity of surface water delivered in accordance with a 5-month and 7-month schedule, and, further, limit the monthly quantity of water so delivered. As a result of these constraints, CCID has historically relied on groundwater to supplement surface water especially during peak summer water demand months. CCID is a signatory to the broadly accepted AB 3616 Best Management Practices Memorandum of Understanding. The District adopted an AB 3030 Groundwater Management Plan and actively manages its surface and ground water through tiered water price incentives or disincentives. This conjunctive management protocol gives CCID maximum flexibility to meet the water demands of its growers.

1. Except as noted, these rules shall apply to all well water pumped for credit in other districts, either from in-District or outside District wells. Each new request must be reviewed and approved by the Board of Directors.

2. All water pumped must meet water quality standards as established by the Board of Directors. Currently, the maximums allowed are:

    a. 1,500 TDS, 2.0 ppm boron
    b. Blended quality downstream of well shall not exceed 700 TDS, 0.5 ppm boron, and no additional selenium detected.

3. Water credits may be used in the Recipient District only by the Landowner who owns the ground where the well is located in CCID. Permission to pump a well for credit will be granted to only one owner during the year; permission cannot be transferred to another owner. Landowner as defined in the District Water Transfer Policy requires that the Landowner own both the land to which the well water is credited as used in CCID and the land in the Recipient District and that both interests in land be held for one year prior to January 1st of the year that the transfer is proposed to occur. If a Landowner owns the In-District land on January 1 of the year in which the transfer is proposed and the Landowner was the tenant upon the property in the previous full year and held a written option to purchase, the Landowner shall be treated as complying with this requirement. The parents or natural or adopted children and grandchildren of a Landowner, will be treated as identical with the Landowner for the purposes of transfers

because these ownership differences often arise from estate planning, governmental entitlement or similar requirements. If ownership is in an entity such as a corporation or partnership, the Landowner's percentage of ownership will limit the amount of water transferable.

3.1. There may be special circumstances in which lands lying adjacent to the District may request that the District allow wells on lands owned by the same Landowner but which wells are also located outside the District boundaries to be pumped into the District system for delivery of the well water from the District system to lands located outside the District owned by the same Landowner; provided, however, that the transfers of well water historically accomplished by the Mall/Craven properties and by the Mosko property, shall be permitted to continue for up to (i) five (5) years subject to the transfer restriction of well water for two (2) out of each three (3) years, or (ii) until the land is sold, whichever date is earlier. In general, the District will apply the same limitations, conditions and policy goals in considering whether to grant or deny those requests.

4. A well pumper will be allowed to pump no more than an amount of the groundwater which can be pumped without damaging other landowners or depleting groundwater storage. This amount is currently estimated at 3.0 acre-feet per acre. Acreage for this calculation will include land owned contiguous to the parcel where the well is located, or within five miles of the well. In no case shall the total water allocation per acre to property in other districts exceed the per-acre allocation for CCID's consumers. Water credits may be used on any land that is within a ten-mile radius of the well or in the same groundwater basin, unless a groundwater consultant's report, which consultant and report are approved by the District, shows that the pumping plan will not result in overdrafting and that adverse effects such as subsidence or unreasonable cones of depression affecting other wells within the area will not occur in the vicinity of the well site. This amount of groundwater pumped for transfer purposes may be reduced or curtailed based upon observed impacts or new information regarding groundwater conditions.

5. Pumping for credit must be terminated if the pumping has a detrimental impact on neighboring wells or on the groundwater table. In case of a dispute over claims of detrimental impacts, a determination will be made by an independent groundwater consultant chosen by the District, whose decision will be final. All costs for the consultant shall be paid by the well pumper. Curtailment of groundwater pumping may occur during the water year and transfer of well water will be curtailed or terminated in those circumstances.

6. Pumping into CCID canals will be allowed only when the pumped water is needed for District water demands.

   a. CCID's surface water supply delivered by the Bureau is generally restricted in monthly quantity. Consequently, unless the water year is such that CCID is accorded water supply delivery flexibility, all well pumping credits on land must be transferred to the Recipient District in the same month in which the water is pumped.
   b. A 10% loss factor will be applied to all well water pumped for credit under this policy.
   c. Every well pumping for credit must have a meter acceptable to CCID.

7. There will be an administrative fee of $2.00 per acre-foot pumped. Other charges to transport well water for credit will be as follows:

   a. A District fee based on actual cost of providing this service will be billed at the end of the water season.
   b. A transfer fee of $4.00/AF for water users not farming in CCID.
   c. Additional fees will be charged based on water quality as follows:

      0 – 500 ppm TDS: No charge
      500 – 1,000 ppm TDS: $ 5.00/AF
      1,000 – 1,500 ppm TDS: $10.00/AF

      Water above 1,500 ppm TDS or 2.0 ppm boron will not be transported.
   d. Any other fees or charges assessed by the Bureau of Reclamation or the receiving districts will be the responsibility of the applicant.
   e. These fees shall be reviewed annually by the Board of Directors and may be revised at that time.

8. In order to avoid unreasonable impacts on the water supply, operations, and financial condition of the District and its water users, the District will not approve a proposal to pump well water for credit unless:

   a. The Recipient District conducts a water conservation program that includes efficient water management practices, or is in compliance with an urban water management plan under Water Code Section 10610 et seq., an urban water shortage contingency plan under Water Code Sections 10621, 10631 and 10656, or an agricultural water management plan adopted pursuant to Water Code Section 10800 et seq.; and
   b. The Recipient District conducts a drainage program which in the sole determination of CCID assures that the water transfer will not cause a deleterious effect on lands downslope from any lands irrigated as a result of the transfer; and
   c. The transferee demonstrates that it will not be dependent upon the transferred water supply at the end of the term of the proposed transfer.
   d. A proposal to pump wells for credit will be approved no more than 2 out of 3 consecutive years. Alteration in the Landowner identity, the well ownership, or the ownership of the land to receive the credit will not avoid this rule. The well may not be subscribed in the program for any purpose for three (3) consecutive years.

9. The applicant must in the form of an agreement hold the District harmless against:

   a. Claims for damage to the groundwater table from adjacent Landowners;
   b. Claims for damages incurred by the applicant in the event the permission to pump for credit is cancelled; and
   c. Any problems that may arise under this program.

10. Permission to pump for credit may be revoked if any of the above terms and conditions are violated.

SAN LUIS CANAL COMPANY

RULES AND REGULATIONS GOVERNING TRANSFERS OF WATER UNDER THE CENTRAL VALLEY PROJECT IMPROVEMENT ACT OF 1992 (PL 102-575)

In order to implement Section 3405 of the Central Valley Improvement Act of 1992 (PL 102-575), San Luis Canal Company ("Company") adopts the following rules and regulations governing transfers of Central Valley Project water.

1. Exclusive Right to Transfer: Inasmuch as the San Luis Canal Company, as a corporate body, possesses the right to receive water pursuant to the exchange contract with the USBR, and inasmuch as the Corporation shareholders possess the right to receive water from the Corporation, it is this Company's position that only the San Luis Canal Company can transfer Corporation water pursuant to Public Law 102-575, Section 3405.

2. Compliance with Laws and Regulations: The Company will comply with the provisions of the Central Valley Project Improvement Act, all applicable regulations and guidelines of the Secretary of the Interior and be consistent with state law. In addition, transfers must be approved by the Contracting Entities and not jeopardize the "Second Amended Contract for Exchange of Waters." (Revised 12/6/67)

3. Limitation: The amount of Company water that can be transferred without unreasonable impacts on the water supply, water quality, operations and financial conditions of the Company and its water users is limited. The Company will not make any transfers that would adversely impact the water supply for its stockholders' land.

4. Groundwater Limitations: There shall be no transfer of groundwater beyond safe yield outside the Company service area.

5. Transferee Limitations: In order to promote the purposes of the Central Valley Project Improvement Act of 1992, and to avoid unreasonable adverse impacts on the water supply, water quality, operations, and financial condition of the Company and its water users, the Company will not enter into a water transfer unless:

a. The transferee initiates a reasonable water conservation program that includes efficient water management practices, or is in compliance with an urban water management plan under Water Code Section 10610 et seq., an urban water shortage contingency plan under Water Code Section 10621, Section 10631, and Section 10656, or an agricultural water management plan adopted pursuant to Water Code Section 10800 et seq. or any revised codes thereafter;

b. The transferee conducts a drainage study to assure that the water transfer will not cause a deleterious effect on lands in proximity to lands irrigated as a result of the transfer; and

c. The transferee demonstrates that it will not be dependent upon the transferred water supply at the end of the term of the proposed transfer, and will be able to relinquish the transferred water supply at that time.

6. Submission of Proposals: The Company will make a formal water transfer application to the USBR. The Company shall submit one (1) complete copy to the transferee. An application shall be deemed complete for the purposes of Company review only when it has been deemed complete by USBR and contains sufficient information for the

Board to determine the impact of the proposed transfer on the water supply, water quality, operations and financial conditions of the Company and its water users, and compliance with CEQA.

7. Future Modifications: Company transfers shall be subject to modification from time to time in response to:

a. Changes in applicable laws, regulations, contracts and court decisions;

b. Changed circumstances that cause a transfer to result in unreasonable impacts on the water supply, water quality, operations, or financial conditions of the Company or its water users;

8. Indemnification: The transferee shall defend, indemnify, and hold harmless the Company against any claims of third parties that the transfer:

a. Is not a beneficial or reasonable use of water;

b. Violates any law or regulation including, but not limited to the National Environmental Policy Act (NEPA), CEQA, Endangered Species acts, Water Quality statutes, and Area of Origin laws; or

c. Has caused or will cause injury or damage to any person or property, including violations of any contracts, leases, trust deeds or water rights.

The foregoing regulations were adopted by the San Luis Canal Company at a regular meeting of its Board of Directors on January 27, _____, 1994.

FIREBAUGH CANAL WATER DISTRICT
WATER TRANSFER POLICY

Firebaugh Canal Water District has the right to appropriate water from the San Joaquin River. Under the terms of the Exchange Contract with the Bureau of Reclamation, the District receives substitute water generally delivered through the Delta-Mendota Canal to Mendota Pool. The District will permit the transfer of substitute water pursuant to this policy.

1. Eligible Transferors. Only District landowners may transfer their water allocation. If a water transfer is proposed by a person who is not the landowner, the written authorization of the landowner must accompany the proposal.

2. District Approval. The District strives to manage water transfers so that the water supply, operations, and financial condition of the District and the Exchange Contractors, and water users within the Exchange Contract service area are not unreasonably impacted. In order to obtain District approval of a water transfer proposal, the transferor must demonstrate that the transfer does not unreasonably impact:

   a. The quantity and quality of the water supply available to the District and its water users;

   b. The ability of the District to blend irrigation return flow and drainage water in its canals to meet water quality standards imposed by the Regional Water Quality Control Board;

   c. The District=s operations including, but not limited to the ability of the District to meet its delivery obligations, obtain additional water supplies, and undertake conservation measures, exchanges, and transfers;

   d. The District=s financial condition and its cost of providing water service to its water users;

   e. The ability of the District or its water users to provide drainage to lands, including the ability to meet regulatory requirements relating to the discharge of agricultural drainage; and

   f. Other relevant factors that may create an adverse financial, operations, or water supply impact on the District or its water users.

   g. The ability of neighboring lands to continue to farm and cultivate crops without the fallowed land creating noxious weeds, dust, insect or disease conditions which may impact those neighboring lands.

3. Water Transfer Proposal. All transfers which an individual landowner wishes to make must be presented to the District for processing.
In any water year, the total water to be transferred shall not exceed that quantity of water that the District determines can be safely transferred without adversely impacting the quantity and quality of the water supply available to the District and its water users. The District will also determine the quantity of water for the water year that the District needs in order to provide for blending of irrigation return flow and drainage water in its canal

systems to meet regulatory requirements. The total water allowed to be transferred shall be computed first after considering these factors and, then, after subtracting the quantity of water needed to offset transportation, evaporation, seepage, metering or measurement error, and any amounts necessary to satisfy agreements with the other Exchange Contractors.

4. Consumptive Use Limitation. Only water that would have been consumptively used or irretrievably lost to beneficial use during the term of the transfer may be transferred, and the transfer quantity may not exceed the transferor=s allocation of water. The District reserves the right to limit transfers during specific months to the quantity of water that would have been consumptively used or irretrievably lost to beneficial use by the transferor during those months.

5. Correlative Share Limitation. The amount of District water that can be transferred without unreasonable impacts on the District and its water users is limited. The District considers the rights of individual landowners to transfer their water supplies to be limited to a correlative share of the total transferable supply. The District will not approve any transfer proposal that would prevent other landowners from transferring their correlative share of the transferable supply of District water.

6. Groundwater Limitations:

   a. General Limitation. The District will not approve any water transfer involving a substitution of groundwater that the District believes (i) is likely to result in significant long-term adverse impacts on groundwater conditions within the District=s service area, (ii) unreasonably interferes with pumping rates or capacities of wells within the District=s service area, or, (iii) interferes with the District=s ability to meet water quality objectives imposed by the Central Valley Regional Water Quality Control Board or other agency having jurisdiction and regulatory authority of the quality of waters used within or discharged from the District=s service area. This limitation shall also apply to water transfer proposals whereby groundwater extracted from lands within the District service area is wheeled in District facilities for use within the District=s service area.

   b. Critical Year Limitation. The District has determined that groundwater pumping within its boundaries during critical water years as defined by the Exchange Contract results in significant long-term adverse impacts on groundwater conditions within the District=s service area that in turn causes unreasonable impacts on the water supply of the District and its water users; therefore, the District will not approve any water transfer proposal that involves pumping of groundwater in critical water years.

7. Transfer Limitations. A transfer will not be approved if the District determines that the water transfer is likely to increase drainage requirements or otherwise cause a deleterious effect on District lands downslope of the lands irrigated as a result of the transfer. The transfer will not be approved unless the Transferor's plan for the lands from which the water will be removed includes a full, detailed and feasible plan to maintain any fallowed lands in a condition in which the lands will not create a risk of insect infestation, disease, dust, noxious weeds or other detrimental condition that may affect neighboring lands and assurances that the plan will be implemented.

8. Compliance with Law and Regulations. Transfer proposals must comply with all

provisions of law including but not limited to the provisions of the California Environmental Quality Act (CEQA).

9. Submission of Proposals:

a. Preliminary Proposals. A transferor may submit a preliminary water transfer proposal to the District prior to the submission of a formal water transfer proposal. The purpose of a preliminary water transfer proposal is to provide the opportunity for informal review by District staff in order to advise the transferor of possible requirements, conditions or objections if a formal proposal is made. The response of the District to a preliminary proposal shall be deemed tentative and subject to change if a formal transfer proposal is made.

b. Formal Proposals. No later than the date the formal water transfer proposal is submitted to the USBR, the transferor shall submit two (2) complete copies to the District. A proposal shall be deemed complete for purposes of District review only when it has been deemed complete by the USBR and contains sufficient information for the District to determine the impact of the proposed transfer on operations of the District, and that it has been analyzed for compliance with CEQA. The transferor must supply any additional information requested by the District in order to enable the District to effectively review the proposal.

10. Hearings. The District may conduct one or more public hearings in order to determine whether the proposed transfer is likely to have an impact on the water supply, operations and financial condition of the District and its water users, and to ensure compliance with CEQA. The transferor and the transferee, or their representative, shall attend any such hearing if requested to do so by the District in order to respond to questions and comments regarding the impact of the proposed water transfer.

11. Future Modifications. District-approved transfers shall be subject to modification from time to time in order to respond to:

a. Changes in applicable laws, regulations, contracts and court decisions;

b. Changed circumstances that cause a transfer to result in unreasonable impacts on the water supply, operations or financial condition of the District or its water users;

c. Proposals by the water users within the District to transfer their correlative share of the District=s transferable water supply.

12. Costs.

a. The transferor must demonstrate that the transferor has paid or has made acceptable arrangements to pay all costs associated with developing a complete water transfer proposal, including the costs associated with necessary environmental review and District staff and attorney review necessary to process the transfer proposal.

b. The transferor shall be responsible to pay all costs incurred by the District in

processing the water transfer proposal and administering the water transfer itself. Such costs shall be charged to the transferor on a time-and-materials/acre-foot basis in accordance with generally accepted accounting practices. A deposit, in an amount to be fixed by the Board of Directors, shall accompany the proposal. If it appears to the District that the deposit will be inadequate to cover the District=s costs, the District may issue a written cost estimate, or estimates, to the transferor. The transferor shall deposit with the District the funds necessary to meet such supplemental cost estimates. The District shall charge its costs against the transferor=s deposits and shall render an accounting to the transferor upon request, but not more often than monthly. Any unexpended portion of the transferor=s deposits shall be refunded upon completion of the transfer. If the transferor fails to deposit sufficient funds to cover the District=s costs, the deficiency shall be due upon submission of an invoice from the District to the transferor. If the transferor fails to pay the invoice, the amount due may, at the District=s election, be added to the transferor=s property taxes or secured by recordation of a lien certificate pursuant to Water Code ' 37212.

13. Charges. Before any water is transferred in a given water year, the transferor shall pay to the District in full:

a. All additional water rates and charges due to the Bureau of Reclamation or other agency that the District is obligated to collect on account of the approved water transfer.

b. The District=s water charges for that year=s water supply to the land from which the water is being transferred

c. Any standby charges or assessments attributable to the subject land for the year of the transfer, and any delinquencies on account of past water charges, standby charges or assessments.

14. Indemnification. The transferor and transferee are required to defend, indemnify, and hold harmless the District against any claims of third parties that the transfer:

a. Violates the terms of the Second Amended Contract for Exchange of Waters, Contract No. Ilr-1144, dated February 14, 1968;

b. Is not a beneficial or reasonable use of water;

c. Violates any law or regulation including, but not limited to the National Environmental Policy Act (NEPA), CEQA, State and Federal Endangered Species acts, water quality statutes, and Area of Origin laws; or

d. Has caused or will cause injury or damage to any person or property, including violations of any contracts, leases, trust deeds or water rights.

The transferor and transferee are also required to defend, indemnify and hold harmless the District from any claims that the transferor or transferees have breached any contractual or statutory duties pertaining to the transfer.

In addition, the transferor shall relinquish for the duration of the approved transfer all entitlement to receive the water supply that is the subject of the approved transfer. The transferor and transferee shall abide by the termination date of the transfer unless extended in the manner provided by law and shall not contest the return of the transferred water supply to the District=s service area upon such termination.

The transferor shall provide the necessary assurances to the District that the transferee has agreed to abide by the termination date as set forth above and that the transferee has agreed to waive any claim of dependency, detrimental reliance, or intervening public use as a basis for extending the water transfer beyond its approved term.

Prior to approval of the proposed transfer, the transferor shall deliver to the District an agreement, in a form acceptable to the District, signed by the transferor and the transferee, by which they agree to conform to this policy, and in particular to the requirements of this Section.

The agreement shall provide among other terms for the compliance with the plan for maintenance of the land and facilities upon the land from which the water is transferred in such a condition that the land will not create a risk of detrimental impacts to surrounding lands. The District shall be granted the right to perform those measures at the cost of the transferor if the measures are not fully and timely complied with.

15. Water Transfers. Water Transfers for use of water outside of the District boundaries may only be accomplished with the written agreement and compliance with the agreement terms established by the Board of Directors and only in compliance with Federal and State law. Transfers to lands outside of the District boundaries are not a matter of right. If any terms of a written agreement specifying the means and conditions of a transfer shall be violated or fail to be performed, the landowner shall be subject to the penalties provided under the terms of the agreement but shall further be barred from receiving water upon any lands within the boundaries of the District until such time as the District Board of Directors shall determine that the transfer agreement terms have been fully complied with. A breach of the terms of a water transfer agreement which cannot be remedied by physical performance may result in a suspension of the right to receive water for up to one calendar year after a hearing is conducted by the Board of Directors, in addition to the remedies, fines or penalties established under the written agreement and under these rules and regulations.

The foregoing policy was adopted by the Firebaugh Canal Water District at a regular meeting of its Board of Directors on March 11, 1993 and revised in the same manner on October 16, 2001 and July 20, 2004.

Columbia Canal Company

Water Transfers

Rules and Regulations

July 8, 1993

Firebaugh, California

BOARD RESOLUTION

RESOLUTION OF THE BOARD OF DIRECTORS OF COLUMBIA CANAL COMPANY ADOPTING RULES AND REGULATIONS GOVERNING TRANSFERS OF WATER UNDER THE CENTRAL VALLEY PROJECT IMPROVEMENT ACT OF 1992 (P.L. 102-575)

WHEREAS, the United States Congress has enacted the Central Valley Project Improvement Act of 1992 (P.L. 102-575) ("the Act") which provides, among other things, for transfers of project water by water users within the Columbia Canal Company's service area; and

WHEREAS, the United States Bureau of Reclamation has promulgated "Interim Guidelines for Implementation of the Water Transfer Provisions of the Central Valley Project Improvement Act (Title XXXIV of Public Law 102-575)" ("the Guidelines") establishing procedures and criteria for processing such water transfers until formal regulations can be adopted; and

WHEREAS, the Act and the Guidelines impose certain duties upon the Columbia Canal Company including but not limited to the duty to determine whether a proposed transfer of project water will have an unreasonable impact on the water supply, operations or financial conditions of the Columbia Canal Company or its water users; and

WHEREAS, the Columbia Canal Company is authorized to make reasonable rules and regulations providing for the equitable, efficient and economic distribution of its water supply; and

WHEREAS, the Columbia Canal Company desires to establish uniform procedures under which such proposed transfers of water will be evaluated, processed and administered,

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of Columbia Canal Company as follows:

10. The said Board hereby adopts the "Rules and Regulations Governing Transfers of Water Under the Central Valley Project Improvement Act of 1992 (P.L. 102-575)" a true coy of which is attached to this Resolution.

11. Pursuant to Article 13 of said Rules and Regulations, the Board hereby adopts the form of "Indemnification and Fallowing Agreement" attached as Exhibit "B" to this Resolution; and

12. The Board authorizes and directs the manager to take such actions and measures as may be reasonably necessary and incidental to implement the Act, the Guidelines and the said Rules and Regulations.

Passed and adopted at a regular/special meeting of the Board of Directors of Columbia Canal Company on July 8, 1993 by the following votes:

AYES:	4
NOES:	0
ABSENT:	1
ABSTAINING:	0

President
Darrell Vincent, Columbia Canal Company

ATTEST:

Secretary
Keith Watkins, Columbia Canal Company

RULES AND REGULATIONS

COLUMBIA CANAL COMPANY

RULES AND REGULATIONS GOVERNING TRANSFERS OF WATER UNDER THE CENTRAL VALLEY PROJECT IMPROVEMENT ACT OF 1992
(PL 102-575)

In order to implement §3405 of the Central Valley Improvement Act of 1992 (PL 102-575), Columbia Canal Company ("Company") adopts the following rules and regulations governing transfers of Central Valley Project water by water users.

1. Company Approval: Insofar as these rules and regulations provide for Company approval of water transfer proposals, they shall mean:

a. First 20%. As to transfer proposals that do not involve more than twenty percent (20%) of the Company's water supply subject to contract with the USBR, the term "Company Approval" shall mean the Company's written findings and conclusions reported to the USBR as to whether the transfer proposal should be approved, or conditionally approved.

b. More than 20%. As to transfer proposals that involve more than 20% of the Company's water supply subject to contract with the USBR, the term "Company Approval" shall mean the Company's approval, or conditional approval, of such proposals.

2. Eligible Transferors: Only landowners may transfer Company water allocations. If a transfer is proposed by a person who is not the landowner, the written concurrence of the landowner must accompany the proposal.

3. Compliance with Laws and Regulations: Transfer proposals must comply with the provisions of the Central Valley Project Improvement Act and all applicable regulations and guidelines of the Secretary of the Interior. All transfer

proposals must also be consistent with State law, including but not limited to the provisions of the California Environmental Quality Act (CEQA).

4. Consumptive Use Limitation: Only water that would have been consumptively used (or irretrievably lost to beneficial use) during the term of the transfer may be transferred - not to exceed the transferor's allocation of project water. The Company reserves the right to limit transfers during specific months to the quantity of water that would have been consumptively used (or irretrievably lost to beneficial use) by the transferor during those months. If the transfer of consumptive use water during such months would have an unreasonable impact on the water supply, operations or financial condition of the Company or its water users, the Company may further limit the transfer.

5. Correlative Share Limitation: The amount of Company water that can be transferred without unreasonable impacts on the water supply, operations and financial conditions of the Company and its water users is limited. The Company considers the rights of individual landowners to transfer their water supplies to be limited to a correlative share of the total transferable supply. The Company will not approve any transfer proposal that would prevent other landowners from transferring their correlative shares of the transferable supply of Company water.

6. Groundwater Limitations:

a. General Limitation. It has been judicially determined that the groundwater supply underlying the lands within the Company is overdrafted. As the supply is overdrafted, any substitution of the use of groundwater for transferred surface water will result in significant long-term adverse impact on groundwater conditions within the Company's service area, and would result in an unreasonable interference with pumping rates or capacities of wells within the Company service area. That, in turn, causes unreasonable impacts on the water supply, operations, and financial condition of the Company and its water users.

For this reason no transfer of groundwater to areas outside the Company service area will be approved and no transfer of surface water without fallowing the land to which such surface supply would have been delivered will be approved.

7. Transferee Limitations: In order to promote the purposes of the Central Valley Project Improvement Act of 1992, and to avoid unreasonable impacts on the water supply, operations, and financial condition of the Company and its water users, the Company will not approve a water transfer proposal unless:

a. The transferee conducts a water conservation program that includes efficient water management practices, or is in compliance with an urban water management plan under Water Code §10610 *et seq.*, an urban water shortage contingency plan under Water Code §10621, §10631, and §10656, or an agricultural water management plan adopted pursuant to Water Code §10800 *et seq.*;

b. The transferee conducts a drainage program to assure that the water transfer will not cause a deleterious effect on lands downslope from any lands irrigated as a result of the transfer; and

c. The transferee demonstrates that it will not be dependent upon the transferred water supply at the end of the term of the proposed transfer, and will be able to relinquish the transferred water supply at that time.

8. Submission of Proposals:

a. Preliminary Proposals. A transferor may submit a preliminary water transfer proposal to the Company prior to the submission of a formal water transfer proposal. The purpose of a preliminary water transfer proposal is to provide an informal review by Company staff in order to advise the transferor of possible requirements, conditions or objections if a formal proposal is made. The response of the Company to a preliminary proposal shall be deemed tentative and subject to change if a formal transfer proposal is made.

b. Formal Proposals. No later than the date the formal water transfer proposal is submitted to the USBR, the transferor shall submit two (2) complete copies to the Company. A proposal shall be deemed complete for the purposes of Company review only when it has been deemed complete by USBR and contains sufficient information for the Company to determine the impact of the proposed transfer on the water supply, operations and financial conditions of the Company and its water users, and compliance with CEQA. The transferor must supply any additional information requested by the Company in order to enable the Company to meet its responsibilities to review the proposal.

(c) Agreement to Fallow Land. No formal proposal shall be complete without an agreement by the transferor to fallow the land to which the transferred water would have been delivered for each crop year in which a transfer is made.

9. Hearings: The Company may conduct one or more public hearings in order to determine the impact of the proposed transfer on the water supply, operations and financial conditions of the Company and its water users, and to ensure compliance with CEQA. The transferor, and the transferee, or their respective representatives, shall attend any such hearing if requested to do so by the Company in order to respond to questions and comments regarding the impact of the proposed water transfer.

10. Future Modifications: Company-approved transfers shall be subject to modification from time to time in response to:

a. Changes in applicable laws, regulations, contracts and court decisions;

b. Changed circumstances that cause a transfer to result in unreasonable impacts on the water supply, operations, or financial conditions of the Company or its water users;

c. Proposals by other water users within the Company to transfer their correlative share of the Company's transferable water supply that, if approved,

would result in more than twenty percent (20%) of the Company's long-term water supply under contract with USBR being committed for transfer.

11. Costs: The transferor shall be responsible for all costs incurred by the Company in processing the water transfer proposal and administering the water transfer itself. Such costs shall be charged to the transferor on a time-and-materials basis in accordance with generally accepted accounting practices. A deposit of $_____ shall accompany the proposal. If it appears to the Company that the deposit will be inadequate to cover the Company's costs, the Company may issue a written cost estimate, or estimates, to the transferor. The transferor shall deposit with the Company the funds necessary to meet such supplemental cost estimates. The Company shall charge its costs against the transferor's deposits and shall render an accounting to the transferor upon request, but not more often than monthly. Any unexpended portion of the transferor's deposits shall be refunded upon completion of the transfer. If the transferor fails to deposit sufficient funds to cover the Company's costs, the deficiency shall be due upon submission of an invoice from the Company to the transferor. If the transferor fails to pay the invoice, the amount due may, at the Company's election, result in forfeiture of the right to receive water, and of the transferor's stock, pursuant to Article X of the Company's Bylaws.

12. Charges: Before any water is transferred in a given water year, the transferor shall pay to the Company in full:

(a) All additional water rates and charges due to the Bureau of Reclamation which the Company is obligated to collect on account of the approved water transfer.

(b) The Company's water charges and assessments for that year's water supply to the land from which the water is being transferred.

(c) The transferor shall also pay, in advance of the transfer, any standby charges attributable to the subject land for the year of the transfer, and any delinquencies on account of past water charges, standby charges or assessments.

13. Indemnification: The transferor and transferee shall defend, indemnify, and hold harmless the Company against any claims of third parties that the transfer:

a. Violates the terms of that certain contract dated February 14, 1968 between CENTRAL CALIFORNIA IRRIGATION DISTRICT, COLUMBIA CANAL COMPANY, SAN LUIS CANAL COMPANY, and FIREBAUGH CANAL COMPANY entitled "Second Amended Contract For Exchange of Waters";

b. Is not a beneficial or reasonable use of water;

c. Violates any law or regulation including, but not limited to the National Environmental Policy Act (NEPA), CEQA, Endangered Species acts, Water Quality statutes, and Area of Origin laws; or

d. Has caused or will cause injury or damage to any person or property, including violations of any contracts, leases, trust deeds or water rights.

e. The transferor and transferee shall also defend, indemnify and hold harmless the Company from any claims that the transferor or transferee have breached any contractual or statutory duties pertaining to the transfer.

f. In addition, the transferor shall relinquish for the duration of the approved transfer the right to receive from the Company the water supply that is the subject of the approved transfer. The transferor and transferee shall abide by the termination date of the transfer unless extended in the manner provided by law and not contest the return of the transferred water supply to the Company's service area upon such termination. In particular, the transferee shall waive any

claim of dependency, detrimental reliance, or intervening public use as a basis for extending the water transfer beyond its approved term.

g. Prior to approval of the proposed transfer, the Transferor shall deliver to the Company an agreement, in a form acceptable to the Company, signed by the Transferor and Transferee by which they agree to conform to these Rules and Regulations, and in particular this Article 13 and transferor agrees to fallow the land to which the transferred water would have been delivered. .

The foregoing regulations were adopted by the Columbia Canal Company at a regular meeting of its Board of Directors on July 8, ____, 1993.

NDEMNIFICATION AND FALLOWING AGREEMENT

INDEMNIFICATION AND FALLOWING AGREEMENT

This Agreement is made by and between COLUMBIA CANAL COMPANY (hereinafter "Company") and the hereinafter named Transferor and Transferee on the date hereinafter set forth in the County of Madera, State of California.

TRANSFEROR:

TRANSFEREE:

PROPOSED TRANSFER:

In consideration of Company's approval of their proposed water transfer, and in order to prevent unreasonable impacts on Company's water supply, operations, and financial condition, the above-named Transferor and Transferee agree and covenant as follows:

1. TRANSFER SUBJECT TO RULES AND REGULATIONS.

1.01 The said transfer shall be subject to the Company's "Rules and Regulations Governing Transfers of Water Under the Central Valley Project Improvement Act of 1992 (PL 102-575)".

2. JOINT INDEMNIFICATION.

2.02 The Transferor and Transferee jointly and severally agree to defend, indemnify and hold harmless the Company against any claims of third parties that the transfer:

a. Violates the terms of that certain contract dated February 14, 1968 between CENTRAL CALIFORNIA IRRIGATION DISTRICT, COLUMBIA CANAL COMPANY, SAN LUIS CANAL COMPANY, and FIREBAUGH CANAL COMPANY entitled "Second Amended

Contract For Exchange of Waters ";

b. Is not a beneficial or reasonable use of water;

c. Violates any law or regulation including, but not limited to the National Environmental Policy Act (NEPA), CEQA, Endangered Species acts, Water Quality statutes, and Area of Origin laws; or

d. Has caused or will cause injury or damage to any person or property, including violations of any contracts, leases, trust deeds or water rights.

3. RELINQUISHMENT OF RIGHT TO RECEIVE WATER.

3.01 The Transferor relinquishes for the duration of the approved transfer the right to receive from the Company the water supply that is the subject of the approved transfer for use on the land within Company's service area.

4. TRANSFEROR TO FALLOW LAND.

4.01 Transferor agrees for the _____ crop year(s) and any subsequent crop years for which this transfer may be extended to fallow the property described in Exhibit A attached hereto which lies within the service area of Company which would have been entitled to receive all or portions of the water transferred.

4.02 The word "fallow" as used herein shall mean that the land will not be used to grow irrigated crops. Any non-irrigated crop may be grown thereon.

4.03 Transferor further agrees that while the land is fallowed that it will be kept clear of weeds or noxious plant life so that the same will not be allowed to go to seed.

4.04 Transferor agrees that if he fails to comply with the provisions of this Article 4 that Company, together with any other remedies available under the laws of the State of California, may terminate delivery of the transferred water to Transferee and terminate delivery of Company water to Transferor for the

land herein described until compliance with the terms hereof is made by Transferor.

5. TRANSFEROR TO INDEMNIFY COMPANY.

5.01 The Transferor agrees to defend, indemnify and hold harmless the Company from any claims that the transfer violates the rights of any tenants or other persons having any interest in the Transferor's land or water supply.

5.02 The Transferor further agrees to defend, indemnify and hold harmless the Company from claims that the Transferor has breached the terms of any agreements relating to the transfer of the water supply, or has failed to comply with any applicable laws or regulations, or has negligently or intentionally caused any injury or damage in the implementation of the water transfer.

6. TRANSFEREE TO INDEMNIFY COMPANY.

6.01 The Transferee agrees to defend. indemnify and hold harmless the Company from any claims that the Transferee has breached the terms of any agreement relating to the transfer of the water supply, or has failed to comply with any applicable laws or regulations, or has negligently or intentionally caused any injury or damage in the implementation of the water transfer.

6.02 The Transferee covenants to abide by the termination date of the transfer unless extended in the manner provided by law and not to contest the return of the transferred water supply to the Company's service area upon such termination.

6.03 In particular, the Transferee waives any claim of dependency, detrimental reliance, or intervening public use as a basis for extending the water transfer beyond its approved term or any approved extension thereof.

6.04 Transferee recognizes that this transfer may be terminated as to future deliveries if Transferor violates the provisons of Article 4 hereof.

*****

7. GENERAL PROVISONS.

7.01 The foregoing indemnification provisions expressly include indemnification of the Company for any fees of attorneys, consultants or expert witnesses reasonably incurred by the Company in protecting itself against the subject claim or claims.

7.02 This Indemnification Agreement shall be binding upon the heirs, successors and assigns of the Transferor and Transferee. A re-transfer of the water supply by the Transferee to a third party shall not relieve the: Transferee of any obligations under this agreement and any Re-transferee shall be subject to all of the terms and provisions hereof.

7.03 In the event suit is brought to enforce or interpret any part of this agreement, the prevailing party shall be entitled to recover as an element of their costs of suit, and not as damages, a reasonable attorneys fee to be fixed by the court. The "prevailing party" shall be the party who is entitled to recover their costs of suit, whether or not the suit proceeds to final judgment. A party not entitled to recover his costs shall not recover attorneys fees. No sum for attorneys fees shall be counted in calculating the amount of a judgment for purposes of determining whether a party is entitled to recover his costs or attorneys fees.

Dated : _____
"Transferor"

Dated: _____
"Transferee"

Dated: Columbia Canal Company

By:_____
President
"Company"

Attachment H

Water Measurement Device Calibration Engineers Report

SUMMERS ENGINEERING, INC.
CONSULTING ENGINEERS
JOSEPH B. SUMMERS
1923-2006
JOSEPH C. McGAHAN
ROGER L. REYNOLDS
BRIAN J. SKAGGS
SCOTT L. JACOBSON
JAMES C. LINNEMAN
887 N. IRWIN ST. - P. O. BOX 1122
HANFORD, CALIFORNIA 93232-1122
TELEPHONE
(559) 582-9237
FAX
(559) 582-7632

August 2, 2012

Mr. Randy Houk
Columbia Canal Company
6770 Avenue 7 ½
Firebaugh, Ca 93622

SUBJECT: Summary of water measurement device survey.

Dear Randy,

At the request of Columbia Canal Company (Company), Summers Engineering collaborated with Larry Freeman of the San Joaquin River Exchange Contractors Water Authority to evaluate the accuracy of a selection of flow measurement devices for field deliveries within the Company. Mr. Freeman has extensive experience in flow measurement and is well qualified to perform the required evaluations. Mr. Freeman has provided the results of his evaluation to Summers Engineering and below is a summary.

Method.
The Company provided Mr. Freeman with a list of turnouts representing a typical mixture of Company delivery points. These turnouts included 8 meter gates, two mechanical meters discharging into an open flow channel, and 14 mechanical meters installed as part of grower-owned filter stations. Each of these installations were evaluated separately using methods appropriate for field conditions.

- Meter gate installations were evaluated based on a comparison of actual field measured flow against the meter gate flow table. Prior to the flow measurement, Mr. Freeman confirmed the gate diameter, measured and recorded the gate opening, the upstream water level and the downstream water level, and consulted the appropriate flow table to determine the predicted flow. Mr. Freeman then measured the actual flow downstream of the meter gate using a current meter and standard stream-gage methods.
- The two turnouts discharging into open flow channels and measured with mechanical meters were evaluated based on a comparison of actual field measured flow against the meter reading. Prior to the flow measurement, Mr. Freeman read and recorded the flow meter reading. Mr. Freeman then measured the actual flow downstream of the meter using a current meter and standard stream-gage methods.

- Mechanical meters installed on filter stations could not be independently field verified. The filter stations pump from the canal serving them and discharge that flow directly into a pressurized irrigation system. For these installations, Mr. Freeman inspected the meter installation to confirm that it was operating (when the system was operating), that it was installed correctly according to standard requirements, and recorded the meter serial number. Literature from the meter manufacturers was reviewed to determine the expected percent accuracy.

Summary of evaluation.
Mr. Freeman's field notes were reviewed by Summers Engineering and the results are summarized in the table below according to installation type.

Table 1: Summary of Evaluation Data.

Installation Type	Number Evaluated	Average % Difference	Maximum % Difference	Manufacturers' Published % Accuracy
Meter-Gate	8	4%	9%	NA
Flow Meter - Open Discharge	2	2%	2%	2%
Flow Meter - Filter Station	14	NA	NA	2%

Summers Engineering's review of the provided test data indicated that the methods utilized were appropriate for the installations evaluated and that the results presented in **Table 1** are correct. All of the installations evaluated appear to be capable of providing flow measurements with an acceptable level of accuracy and, provided that these installations are typical for the Company, the Company should have confidence in the measurement of their 01273 field-level deliveries.

Please contact me if you have any questions.

Very truly yours,

Joseph C. McGahan
RCE: 26307

cc: Larry Freeman, San Joaquin River Exchange Contractors Water Authority.

Attachment I

Notices of District Education Programs and Services Available to Customers

SAN JOAQUIN RIVER EXCHANGE CONTRACTORS' WATER AUTHORITY
CCID • CCC
FCWD • SLCC

((Summer 2012))

541 H St. • Los Banos, CA 93635

An informational newsletter for water users and landowners in the San Joaquin River Exchange Contractors' service area.

EXCHANGE perspective

July 2012

Exchange Contractors Protest Long-Term Permits for Restoration Releases

The Exchange Contractors has filed a protest with the State Water Resources Control Board challenging the Bureau of Reclamation's long-term water rights permit petition to allow releases down the San Joaquin River for implementation of the San Joaquin River Restoration Program (SJRRP).

Although annual releases from Friant Dam for the SJRRP have occurred since October 2009, the Exchange Contractors have successfully used these protests each year to get conditions placed on restoration releases. Those conditions help protect landowners downstream who have been impacted by seepage from elevated releases or could be impacted by increased flows down the San Joaquin River to support the introduction of Spring Run Salmon.

"This is the process where we have received the most relief in getting conditions placed in the permit to protect us," said Executive Director Steve Chedester. "In past years, when we have filed protests, we have been able to collaborate with the State Water Resources Control Board and Bureau of Reclamation to get seepage and other conditions included in the permits."

continued on next page

Comments Submitted on Permits for Endangered Salmon "Take"

In late May, the Exchange Contractors submitted public comments to the National Marine Fisheries Service on its proposed Endangered Species Act permit to allow "take" of Spring Run Salmon reared at the Feather River fish hatchery in Oroville and transported to Friant Dam for release into the San Joaquin River.

The SJRECWA drafted comments along with the San Joaquin River Resource Management Coalition and other impacted third parties to the San Joaquin River Restoration Settlement Act. They point out failures with Reclamation's plan to continue on a timeline to introduce endangered Spring Run Salmon into the San Joaquin River below Friant in December. The Endangered Species "Take" Permit is required to allow the Bureau of Reclamation and federal fish agencies to relocate endangered Spring Run Chinook Salmon from the Feather River, raise them at the hatchery at Friant and then introduce those fish into the San Joaquin River below Friant Dam, where they are then protected under the federal Endangered Species Act.

Steve Chedester, Executive Director for the Exchange Contractors, said impacted third parties are concerned that the Bureau of Reclamation, in conjunction with the federal and state fish agencies, appears poised to continue its planned schedule to introduce the endangered Central Valley Spring Run Salmon into the San Joaquin River despite the fact that ground has not yet been broken on Phase I mitigation projects called for in the Restoration Settlement Agreement and resulting federal law.

"We are opposed to this proposal because the San Joaquin River Settlement and resulting legislation stated there were going to be river improvements not only to habitat but necessary infrastructure for fish passage in the river

continued on next page

Exchange Contractors Protest Long-Term Permits

continued from previous page

Since 2009, these petitions have been secured as annual permits. However, this year the Bureau has submitted a long-term change petition that will make those water releases and corresponding permit conditions permanent.

"We won't have any more bites at the apple after this year so this is a big issue for us. We want to make sure we get long-term conditions in the permit that provide protections for our right to divert water off the San Joaquin River; that protect our members' diversion structures; and that limit flows to non-damaging levels for our landowners adjacent to the River," Chedester said.

The Exchange Contractors filed a protest and comments in mid-June to include in the long-term permit those conditions the Exchange Contractors have gained in prior years plus additional conditions to further protect third-party interests from effects of increased flows. Among past conditions secured by the Exchange Contractors and petitioned again this year are landowner protections, such as seepage mitigation, levee stabilization, fish bypasses and other projects.

Additionally, the Exchange Contractors are seeking assurances that federally endangered Spring Run Salmon will not be imported into the upper San Joaquin River until necessary infrastructure projects that were part of the Settlement and the enabling legislation have been completed to improve their survivability.

The Exchange Contractors are also working through the environmental permitting process to gain long-term exemptions for their irrigation diversions and for farmers in the area to continue lawful agricultural practices without the risk of violating endangered species laws for impacts to reintroduced Spring Run Salmon.

Comments Submitted on Permits for Endangered Salmon "Take"

continued from previous page

such as around the Mendota Dam and around or through Sack Dam all the way to the Merced River," Chedester said.

"The infrastructure and habitat improvements are years behind schedule and the lack of adequate funding is a continuing concern for us," he added. "The SJRRP's own recent analysis pegs the estimated cost for the core elements at $900 million, and the other necessary elements at an additional $1.4 billion. We just do not see the federal dollars available to cover the $2.3 billion needed to complete the project."

In written comments and statements during a public hearing on the issue in Los Banos in May, Chedester noted that the Environmental Evaluation violated, on several levels, the National Environmental Protection Act and California Environmental Quality Act that govern environmental evaluations for endangered species. Among the concerns noted:

1. The Environmental Evaluation violates the National Environmental Protection Act by evaluating only part of the project proposed by the U.S. Fish and Wildlife Service in its permit application.

2. National Marine Fisheries Service improperly tiers off previous environmental drafts for the San Joaquin River Restoration Project.

3. National Marine Fisheries Service has made an irretrievable commitment of resources in violation of federal law by investing in broodstock for the re-introduced salmon before permits are completed.

4. National Marine Fisheries Service has improperly "segmented" the Environmental Analysis in violation of federal law.

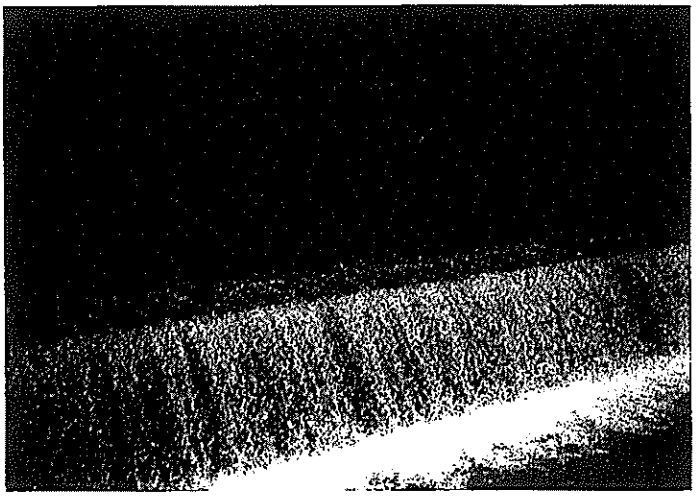
5. Analysis of the effects of the collection of eggs and juveniles from the Feather River Hatchery on the Feather River Spring Run Chinook Salmon population is inadequate.

6. The environmental analysis fails to adequately assess the impact if juveniles or eggs are accidentally or intentionally released from holding pens into the river.

7. The environmental assessment fails to assess the potential impacts on collected Spring Run Chinook Salmon if the issuance of the permit to release those juveniles into the river is delayed.

8. The assessment fails to take into account the inadequate funding for the activities authorized by the "take" permit.

Chedester said that third-party landowners within the Exchange Contractors could be at risk if federally listed endangered species are introduced into the San Joaquin River without the above issues being addressed, without adequate ESA protections afforded in the enabling legislation in place, and without implementation of mitigation projects down the river. The NMFS will review these and other comments and respond before issuing its final decision later this year.



The Exchange Contractors noted several issues in recent public comments on an ESA permit request to relocate federally endangered salmon from the Feather River Fish Hatchery to Friant Dam for release into the San Joaquin River.

Bureau Regional Director Learns About Area Conservation Projects and Plans

Donald Glaser, mid-Pacific regional director with the Bureau of Reclamation, in May toured portions of the Exchange Contractors to learn more about conservation measures and other improvements within its service area.

The Bureau's Don Glaser, left, talks with John Relvas of CCID about initial water benefit plans being explored for Los Banos Creek Detention Dam.

Glaser spent time touring the area with Exchange Contractors staff, district managers and landowners to see first-hand on-farm and in-district conservation projects including micro-irrigation installations in the field, regulating reservoirs and canal facility modernization projects.

"This was the regional director's first time to visit specific sites in our area at this level and we spent a lot of time informing him about efforts the Exchange Contractors' members are doing to beneficially use their water resources," said SJRECWA Executive Director Steve Chedester.

Glaser also visited the Los Banos Creek Detention Dam to hear more about initial plans to get some additional water supply benefits for the region from the facility.

The Exchange Contractors are exploring the possibility of partnering with local water agencies, state and federal agencies, and the City of Los Banos on a plan to utilize the Los Banos Creek Detention Dam for additional water supply benefits for the partnership.

The Exchange Contractors Board of Directors in April initiated a feasibility study on Los Banos Creek Detention Dam as part of the first phase of a larger Water Resource Plan for the Authority. The feasibility analysis will determine if it is possible to utilize the Los Banos Creek facility for additional surface water storage and groundwater recharge opportunities. The Los Banos Creek project could provide significant benefits including, among other things, improved water supply reliability, recharge of local runoff, groundwater table stability and recreational and environmental enhancements behind the dam. These improvements could also improve the water supply and quality for the City of Los Banos.

Glaser reacted favorably to initial discussions about working with partners to utilize and get water supply benefits out of the Bureau-owned facility, Chedester said. The Exchange Contractors will review the feasibility report for the project and, if it looks favorable, put together plans for further phases. The Water Resources Plan includes the Los Banos Creek Detention Dam project and investigations into groundwater recharge opportunities throughout the service area that would maximize flexibility and improve reliability to the area in times of short supplies.

Exchange Contractors Formulate Plan to Comply with Water Efficiency Law

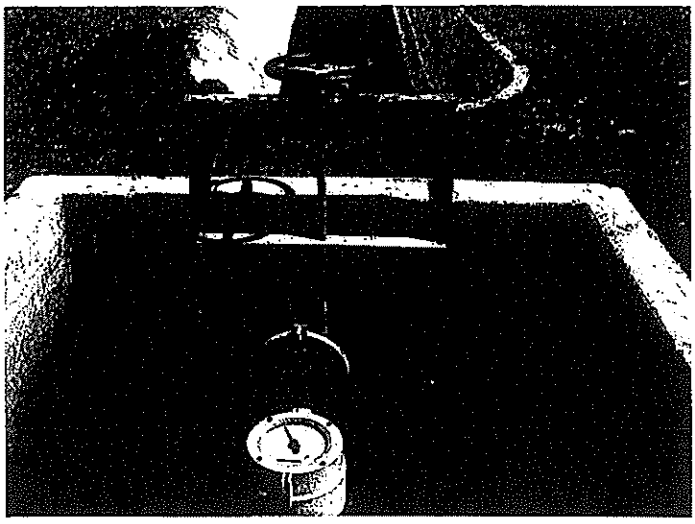
The Exchange Contractors are currently putting together an update for its Water Conservation Plan that is due this coming December. Included in this updated plan are compliance options for a new state requirement (Senate Bill X7-7) for its four member entities. Senate Bill X7-7 requires increased measurements and certification of the accuracy of delivered water by agricultural water suppliers.

SB X7-7, adopted in 2009 as a concession to environmental groups during state water bond negotiations, requires a 20 percent reduction in per capita water use in urban areas by 2020. The law also contains a number of measurement and pricing provisions for agricultural water suppliers, including a provision that agricultural water districts measure volumetrically all water at each field.

The Exchange Contractors' members have been measuring water deliveries to growers for years as part of its tiered water pricing and delivery system. However, this new provision will require measurement on a field-by-field, rather than aggregate, basis. The Bill also requires those measurements to be certified within 12 percent accuracy for existing measurement devices and within 5 percent accuracy for newly installed measurement devices.

Initially under the Bill, ag and urban water users had until July 31 to certify as accurate the volume they were delivering to each field. Realizing that the expense and labor required to measure each field was prohibitive, DWR now is requiring that agencies randomly select 10% of their measuring sites and certify that they are in compliance, in addition to including a plan on how they intend to comply with the new requirements on the remaining measuring sites.

"The Exchange Contractors' member agencies have over 4,000 turnouts and obviously will not be able to certify that all 4,000 turnouts are in compliance," said Executive Director Steve Chedester. "We will have to propose a plan to the state that provides a three-year implementation plan."



Under a new state law agricultural water districts will have to measure all water delivered to customers on a field-by-field basis and certify those measurements as accurate.

EXCHANGE perspective

San Joaquin River Exchange
Contractors Water Authority
PO Box 2115
Los Banos, CA 93635
Tel: 209.827.8616
Email: contactus@sjrecwa.net
website: www.sjrecwa.net

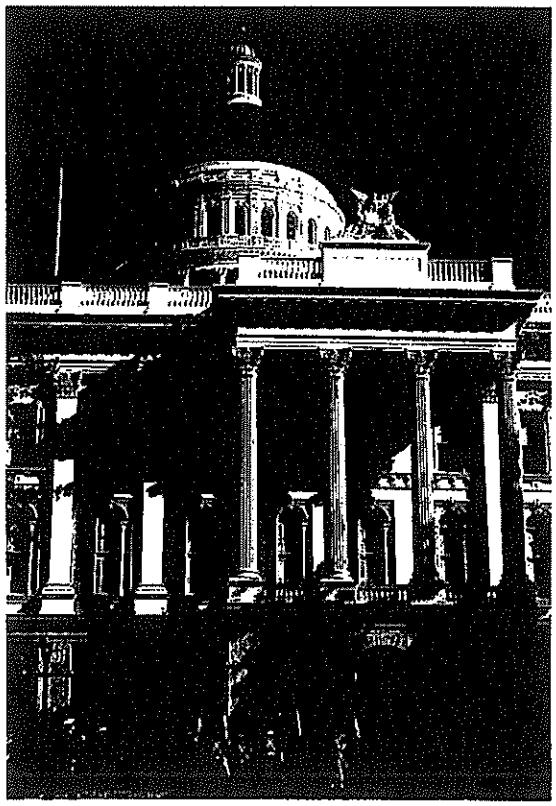
www.sjrecwa.net

GREETINGS

There are many water resource issues occurring in our region, and some are not likely to be resolved in the near term and will require long-term planning strategies. Those issues include the San Joaquin River Restoration Program, Bay Delta Conveyance and proceedings before the State Water Resources Control Board and the Regional Water Quality Control Board. Through our newsletters, our goal is to provide you with timely and useful information regarding some of these activities. We encourage you to contact our office should you have any questions or concerns about any of these activities.

Steve Chedester

Executive Director
San Joaquin River Exchange Contractors Water Authority



CAL POLY Irrigation Training & Research Center

ITRC moving water in new directions

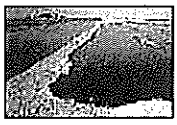
:: Irrigation Evaluation Data ::

Welcome to the Irrigation Evaluation Project. The purpose of this page is to provide access to Irrigation Evaluation data that has been collected and compiled over the years. The spreadsheets available below are free for public use. For more information about the ITRC Irrigation Evaluation program, ITRC has additional resources available on this website:

- Irrigation System Evaluation Short Courses both online and on-site
- ITRC Paper No. P 2008-005: "Accuracy of Global Microirrigation Distribution Uniformity Estimates" by Styles et al
- External Paper: Burt, C.M. (2004). "Rapid Field Evaluation of Drip and Microspray Distribution Uniformity." Irrig. Drain. Syst., (18) 257-297
- ITRC Paper No. P 1997-003: "Irrigation Performance Measures: Efficiency and Uniformity" by Burt et al
- ITRC Paper No. P 1995-005: "Identification and Quanitification of Efficiency and Uniformity Components" by Burt et al
- Ag. Irrigation Evaluation & Distribution Uniformity Software, available for purchase

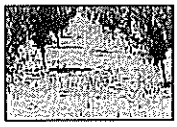
Downloadable Data

Data is compiled in spreadsheets for six types of irrigation systems. This data is meant for use with the evaluation data input and results forms for each particular system type, generated using the Irrigation Evaluation program. To retrieve each Excel spreadsheet, click on the irrigation method below.



Border Strip

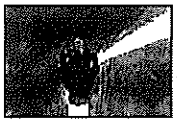
Furrow



Undertree Sprinkler

Linear Move Sprinkler

Drip/Micro
Updated 4/2012



Hand Move Sprinkler

(Because of the amount of information for each entry, Hand Move Sprinkler data is divided into three spreadsheets)

GO

IRRIGATION TRAINING & RESEARCH CENTER
California Polytechnic State University
San Luis Obispo, CA 93407-0730
Phone: 805.756.2434 Fax: 805.756.2433
Contact Us!

CAL POLY Irrigation Training & Research Center

ITRC moving water in new directions

Welcome to the Irrigation Training & Research Center

California Polytechnic State University San Luis Obispo

The Irrigation Training & Research Center (ITRC) was established in 1989 at California Polytechnic State University, San Luis Obispo, as a center of excellence, building on a history of contributions to the irrigation industry.

The first commitment of ITRC is to enhance Cal Poly's strong irrigation teaching program through outside activities in training, research, and technical support. Irrigation faculty members comprise the board of directors; an industry advisory board provides guidance and support.

Cal Poly and ITRC are proud of their ability to combine sophisticated theory with a "hands-on" approach to provide a usable product. Our website features many examples of our results, through papers and reports that are available for download, valuable public databases, and samples of our many and varied projects.

For more information about ITRC, visit our About ITRC page. Many of the educational services that ITRC provides are made possible by our supporters and their generous donations of services, equipment, and funds.

Can't find something you're looking for? Use the search bar at the bottom of each web page.

Questions? Contact us.

Online Course Login

GO

IRRIGATION TRAINING & RESEARCH CENTER
California Polytechnic State University
San Luis Obispo, CA 93407-0730
Phone: 805.756.2434 Fax: 805.756.2433
Contact Us!

Programs & Services

The Center for Irrigation Technology offers special software packages designed to improve efficiency in large and small-scale irrigation systems. On-site testing services also are available. For details click on your area of interest.

Results of Emitter Grit Test Evaluation Excel spreadsheet containing test results from CITs emitter grit test evaluation.

Profile Files Profiles from CIT and other manufacturers are now available online and *free*.

SPACE Pro™ A software package that gives turf managers the ability to test and compare different irrigation systems. This is a Windows 95/98/NT version combining SPACE, Hyper-SPACE, and SPACE Irrigation Survey.

Online demo. Try out a few overlaps online and see how SPACE uses graphical and statistical data to analyze your irrigation system.

Download the latest version of SPACE Pro (This is an update for SPACE Pro. You must have installed SPACE Pro from the original CD to use this update).

Hyper-SPACE for Windows Download the last version of Hyper-SPACE for Windows (This is an update for SPACE for Windows. You must have installed Hyper-SPACE for Windows from the original disk to use this update).

Drip Emitters and Microsprinkler Index This is a complete listing of all available test data for drip emitters and microsprinklers CIT has tested.

International Organization for Standardization (ISO) Irrigation Standards Listing of irrigation standards that are developed and promulgated by the International Organization for Standardization (ISO).

Testing Services Product testing and evaluation, standards development and implementation, information and technology transfer and analytical studies.

Welcome to CIT.

In our unique position as an independent research and testing facility, the Center for Irrigation Technology ('CIT) plays a vital role in assisting designers, manufacturers and users of irrigation equipment to make the technological advances required for our growing, changing world.

International Center for Water Technology (ICWT) information

2012 WATER TECHNOLOGY CONFERENCE

World Ag Expo Irrigation Presenters Needed Abstract Deadline September 24th

Agricultural Pumping Efficiency Program Information
(an energy efficiency program funded by the Public Goods Charge
as a result of CPUC R.01-08-028)

Check out Wateright, our new interactive web site that assists homeowners, turf managers and growers with irrigation scheduling!

Golf Course Irrigation Nozzle Study

A Landowner's Manual - Managing Agricultural Irrigation Drainage Water

California Agricultural Technology Institute - CATI
Jordan College of Agricultural Sciences and Technology
Contact Web Master | Last Updated 06/28/2010

Attachment B

Columbia Canal Company, Board of Directors Resolutions Adopting:

- **BOR Water Management Plan, December 2012**
- **State Agricultural Water Management Plan, December 2012**

RESOLUTION NO. 2012-1
COLUMBIA CANAL COMPANY
BOARD OF DIRECTORS
ADOPTING A RESOLUTION
APPROVING THE 2012 UPDATE TO THE JOINT WATER MANAGEMENT PLAN
AND THE SBx7-7AGRICULTURAL WATER MANAGEMENT PLAN

NOW, THEREFORE, BE IT RESOLVED, ADJUDGED and **ORDAINED** that:

The Board of Directors of CCC hereby approves the Columbia Canal Company Agricultural Water Management Plan

BE IT FURTHER RESOLVED THAT the Board of Directors hereby appoints Randal G. Houk, CCC General Manager to act as its' representative in all proceedings pertaining to this resolution No.2012-01.

PASSED AND ADOPTED THIS 13th day of December, 2012 by the following vote:

AYES: **President Roy Catania, Director Cardella, Director Aaron Vincent, Director MacIlvaine**

NOES: **None**

ABSENT: **One, Director Shane Burkhart**

ABSTAINED: **None**

6770 Avenue 7 1/2 • Firebaugh, California 93622 • Telephone (559) 659-2426 • Fax (559) 659-2424

ATTEST:

COLUMBIA CANAL COMPANY

By: Roy Catania
ROY CATANIA, President

By:
SHANE BURKHART, Secretary

Attachment C

Checklist of Water Code Requirements

Checklist of Water Code Requirements

AWMP* Location	Guidebook Location	Description	Water Code Section (or other, as identified)
Yes	1.4	AWMP Required?	10820, 10608.12
No	1.4	At least 25,000 irrigated acres or	10853
Yes	1.4	Less than 25,000 acres and funding provided	10853
December 13, 2012	1.4	Initial AWMP prepared and adopted by December 31, 2012?	10820 (a)
N/A	1.4	December 31, 2015 update	10820 (a)
Yes	1.4	5-year cycle update	10820 (a)
N/A	1.4	New agricultural water supplier after December 31, 2012 - AWMP prepared and adopted within 1 year	10820 (b)
N/A	1.5, 4.2	1999 AWMC MOU: Report on EWMP implemented or scheduled for implementation included	10827
Yes	1.5, 5	USBR water management/conservation plan: December 2012	10828(a)
Yes	1.5, 5.1	Adopted and submitted to USBR within the previous four years, AND	10828(a)(1)
In Process	1.5, 5.1	The USBR has accepted the water management/conservation plan as adequate	10828(a)(2)
Yes	1.4	UWMP or participation in area wide, regional, watershed, or basin wide water management planning: does the plan meet requirements of SB X7-7 2.8 **(use checklist)**	10829
Yes	3.1 A	Description of previous water management activities	10826(d)
Yes	3.1 B.1	Was each city or county within which supplier provides water supplies notified that the agricultural water supplier will be preparing or amending a plan?	10821(a)
Yes	3.2 B.2	Was the proposed plan available for public inspection prior to plan adoption?	10841
N/A	3.1 B.2	Publicly-owned supplier: Prior to the hearing, was the notice of the time and place of hearing published within the jurisdiction of the publicly owned agricultural water supplier in accordance with Government Code 6066?	10841
N/A	3.1 B.2	14 days notification for public hearing	GC 6066
N/A	3.1 B.2	Two publications in newspaper within those 14 days	GC 6066
N/A	3.1 B.2	At least 5 days between publications? (not including publication date)	GC 6066
Yes	3.1 B.2	Privately-owned supplier: was equivalent notice within its service area and reasonably equivalent opportunity that would otherwise be afforded through a public hearing process provided?	10841
Yes	3.1 C.1	After hearing/equivalent notice, was the plan adopted as prepared or as modified during or after the hearing?	10841

AWMP* Location	Guidebook Location	Description	Water Code Section (or other, as identified)
Yes	3.1 C.2	Was a copy of the AWMP, amendments, or changes, submitted to the entities below, no later than 30 days after the adoption?	10843(a)
Yes	3.1 C.2	The department.	10843(b)(1)
Yes	3.1 C.2	Any city, county, or city and county within which the agricultural water supplier provides water supplies.	10843(b)(2)
N/A	3.1 C.2	Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.	10843(b)(3)
N/A	3.1 C.2	Any urban water supplier within which jurisdiction the agricultural water supplier provides water supplies.	10843(b)(4)
Yes	3.1 C.2	Any city or county library within which jurisdiction the agricultural water supplier provides water supplies.	10843(b)(5)
Yes	3.1 C.2	The California State Library.	10843(b)(6)
Yes	3.1 C.2	Any local agency formation commission serving a county within which the agricultural water supplier provides water supplies.	10843(b)(7)
Yes	3.1 C.3	Adopted AWMP availability	10844
N/A	3.1 C.3	Was the AWMP available for public review on the agricultural water supplier's Internet Web site within 30 days of adoption?	10844(a)
Yes	3.1 C.3	If no Internet Web site, was an electronic copy of the AWMP submitted to DWR within 30 days of adoption?	10844(b)
Yes	3.1 D.1	Implement the AWMP in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.	10842
Yes	3.2	Description of the agricultural water supplier and service area including:	10826(a)
Yes	3.2 A.1	Size of the service area.	10826(a)(1)
Yes	3.2 A.2	Location of the service area and its water management facilities.	10826(a)(2)
Yes	3.2 A.3	Terrain and soils.	10826(a)(3)
Yes	3.2 A.4	Climate.	10826(a)(4)
Yes	3.2 B.1	Operating rules and regulations.	10826(a)(5)
Yes	3.2 B.2	Water delivery measurements or calculations.	10826(a)(6)
Yes	3.2 B.3	Water rate schedules and billing.	10826(a)(7)
Yes	3.2 B.4	Water shortage allocation policies.	10826(a)(8)
Yes	3.3	Water uses within the service area, including all of the following:	10826(b)(5)
Yes	3.3 A	Agricultural.	10826(b)(5)(A)
Yes	3.3 B	Environmental.	10826(b)(5)(B)
Yes	3.3 C	Recreational.	10826(b)(5)(C)
Yes	3.3 D	Municipal and industrial.	10826(b)(5)(D)
Yes	3.3 E	Groundwater recharge.	10826(b)(5)(E)
Yes	3.3 F	Transfers and exchanges.	10826(b)(5)(F)
Yes	3.3 G	Other water uses.	10826(b)(5)(G)
Yes	3.4 A	Description of the quantity of agricultural water supplier's supplies as:	10826(b)

AWMP* Location	Guidebook Location	Description	Water Code Section (or other, as identified)
Yes	3.4 A.1	Surface water supply.	10826(b)(1)
Yes	3.4 A.2	Groundwater supply.	10826(b)(2)
Yes	3.4 A.3	Other water supplies.	10826(b)(3)
Yes	3.4 A.4	Drainage from the water supplier's service area.	10826(b)(6)
Yes	3.4 B	Description of the quality of agricultural waters suppliers supplies as:	10826(b)
Yes	3.4 B.1	Surface water supply.	10826(b)(1)
Yes	3.4 B.2	Groundwater supply.	10826(b)(2)
Yes	3.4 B.3	Other water supplies.	10826(b)(3)
Yes	3.4 C	Source water quality monitoring practices.	10826(b)(4)
N/A	3.4 B.4	Drainage from the water supplier's service area.	10826(b)(6)
Yes	3.5	Description of water accounting, including all of the following:	10826(b)(7)
Yes	3.5 A	Quantifying the water supplier's water supplies.	10826(b)(7)(A)
Yes	3.5 B	Tabulating water uses.	10826(b)(7)(B)
Yes	3.5 C	Overall water budget.	10826(b)(7)(C)
Yes	3.5 D	Description of water supply reliability.	10826(b)(8)
Yes	3.6	Analysis of climate change effect on future water supplies analysis	10826(c)
Yes	3.7	Water use efficiency information required pursuant to Section 10608.48.	10826(e)
Yes	3.7 A	Implement efficient water management practices (EWMPs)	10608.48(a)
Yes	3.7 A.1	Implement Critical EWMP: Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).	10608.48(b)
N/A	3.7 A.1	Implement Critical EWMP: Adopt a pricing structure for water customers based at least in part on quantity delivered.	10608.48(b)
Yes	3.7 A.2	Implement additional locally cost-effective and technically feasible EWMPs	10608.48(c)
Yes	3.7 B	If applicable, document (in the report) the determination that EWMPs are not locally cost-effective or technically feasible	10608.48(d)
Yes	3.7 A	Include a report on which EWMPs have been implemented and planned to be implemented	10608.48(d)
Yes	3.7 A	Include (in the report) an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future.	10608.48(d
Yes	5	USBR water management/conservation plan may meet requirements for EWMPs	10608.48(f)
N/A	6 A	Lack of legal access certification (if water measuring not at farm gate or delivery point)	CCR §597.3(b)(2)(A)

AWMP* Location	Guidebook Location	Description	Water Code Section (or other, as identified)
N/A	6 B	Lack of technical feasibility (if water measuring not at farm gate or delivery point)	CCR §597.3(b)(1)(B), §597.3(b)(2)(B)
N/A	6 A, 6 B	Delivery apportioning methodology (if water measuring not at farm gate or delivery point)	CCR §597.3.b(2)(C),
Yes	6 C	Description of water measurement BPP	CCR §597.4(e)(2)
Yes	6 D	Conversion to measurement to volume	CCR §597.4(e)(3)
N/a	6 E	Existing water measurement device corrective action plan? (if applicable, including schedule, budget and finance plan)	CCR §597.4(e)(4))

Attachment D

Notification of AWMP Preparation

COLUMBIA CANAL CO.

Madera County Planning Department
Norman L. Allinder, Planning Director
2037 W. Cleveland Ave., M. S. G.
Madera, Ca. 93637

Re: Columbia Canal Company
SBx7-7: Preparation of Agricultural Water Management Plan

Dear Mr. Allinder;

The Columbia Canal Company (Columbia) is preparing an Agricultural Water Management Plan (AWMP) in accordance with the requirements of SBx7-7. As a privately owned agricultural water supplier, Columbia is required to provide an opportunity for public participation. The Columbia water service area includes land in both Fresno and Madera counties. The Draft AWMP will be available for review at the Columbia office from January 1 through January 15, 2013. Columbia will be accepting written comments until close of business January 31, 2013.

If you would like to participate in the public process by reviewing the draft AWMP, please contact Mr. Randy Houk (rghccc@sbcglobal.net), the Columbia General Manager. The Draft AWMP will be provided for review at the Columbia office. Also, arrangements can be made to obtain an electronic copy for review/comment purposes.

Sincerely,

Randy Houk
General Manager, Columbia Canal Company

COLUMBIA CANAL CO.

Fresno County, Public Works and Planning
Alan Weaver, Director
2220 Tulare St., 6th Floor
Fresno, Ca. 93721

Re: Columbia Canal Company
SBx7-7: Preparation of Agricultural Water Management Plan

Dear Mr. Weaver;

The Columbia Canal Company (Columbia) is preparing an Agricultural Water Management Plan (AWMP) in accordance with the requirements of SBx7-7. As a privately owned agricultural water supplier, Columbia is required to provide an opportunity for public participation. The Columbia water service area includes land in both Fresno and Madera counties. The Draft AWMP will be available for review at the Columbia office from January 1 through January 15, 2013. Columbia will be accepting written comments until close of business January 31, 2013.

If you would like to participate in the public process by reviewing the draft AWMP, please contact Mr. Randy Houk (rghccc@sbcglobal.net), the Columbia General Manager. The Draft AWMP will be provided for review at the Columbia office. Also, arrangements can be made to obtain an electronic copy for review/comment purposes.

Sincerely,

Randy Houk
General Manager, Columbia Canal Company

SAN JOAQUIN RIVER EXCHANGE CONTRACTORS WATER AUTHORITY
CCID • CCC
FCWD • SLCC

((Fall 2012))

541 H St. • Los Banos, CA 93635

An informational newsletter for water users and landowners in the San Joaquin River Exchange Contractors' service area.

EXCHANGE perspective

November 2012

Exchange Contractors' Engagement In Restoration Issues Yields Results

The San Joaquin River Exchange Contractors continues to work steadily to protect third-party interests during the implementation of the San Joaquin River Restoration Program by state and federal agencies.

That work is paying off as those agencies considered positions advocated by the Exchange Contractors in making two important decisions on the pace and scope of implementation of the Restoration Program. Protections sought by the Exchange Contractors and other third-party interests to the San Joaquin River Restoration Program have been included in the federal government's environmental documents final approval (Record of Decision) and in the State Water Resources Control Board's order approving the Bureau of Reclamation's Long-Term Change Petition to release flows from Friant Dam for fishery purposes. In addition, Exchange Contractors has had success in how the SJRRP is implementing endangered species "Take Permits" issued for reintroduction of endangered salmon.

The Exchange Contractors over the last 18 months has submitted a significant amount of comments and supporting documents seeking protections for its landowners in the final EIR/EIS and in how the Endangered Species Act "Take Permits" are drafted and implemented for the relocation and release of spring run Salmon. Executive Director Steve Chedester said the Exchange Contractors and SJR Resource Management Coalition have worked directly with government agencies and through political channels to ensure that final approvals and permits were not issued without protections in place for the landowners and diversions.

The San Joaquin River Settlement Act contains provisions that require the National Marine Fisheries Service (NMFS) to designate Spring-Run Chinook Salmon relocated and released below Friant Dam from the Feather River fish hatchery in Oroville as an "experimental population" allowing for exemptions to the ESA that provide protections for third parties. This is done through a formal 10(j) and 4(d) rule making process pursuant to the ESA. The Exchange Contractors has advocated for an open process and provided input into what it believes is protective language for its growers and other third parties.

"The proof will be when we get a chance to actually see the draft rules, which we understand will not be until mid-2013," Chedester said.

continued on page 3

Exchange Contractors Help Make C.A.S.T. for Kids a Success, see page 3

Volunteers from the Exchange Contractors and a group of young fishing enthusiasts have fun on the lake during the CAST for Kids day at the O'Neill Forebay on Oct. 27.

Water Resources Plan Projects Moving Forward

Plans underway to implement water banking and Detention Dam projects.

The Exchange Contractors this year is moving toward implementing the first two major components of its Water Resources Plan (WRP). The WRP is a long-term comprehensive plan intended to provide maximum flexibility for landowners to meet their water demands into the future, particularly given the uncertain outlook caused by Delta issues, regulations, climate change and other concerns.

The first project is a proposed internal groundwater-banking project that provides a mechanism for potentially banking surface water from within the Exchange Contractors to recharge groundwater aquifers in Columbia Canal Company for later use during drought years.

The initial small-scale pilot project could become a model for other similar water banking projects in the Exchange Contractors to manage resources in a way that provides operational flexibility for growers within the service area, particularly in critical water years when surface deliveries are uncertain or in short supply.

The project in essence would allow member entities to bank water in excess of their needs during a given year into the aquifer. That water would then be delivered to Columbia in lieu of running deep wells. Water equivalents would then be made available back to the contributing entity at a later date based on the individual agreements between the member entities.

Preliminary studies completed last year on potential groundwater recharge sites identified one area within Columbia with strong potential due to its good soil characteristics for recharge and extraction and deep water table storage capacity. Analysis is still being finalized to test well capacities and ensure there are no negative impacts, but the project is showing significant promise. If further study warrants, the goal is to have Phase I of the water-banking project ready and operational by this season.

"There is good potential for this to work on a small scale," said Exchange Contractors Executive Director Steve Chedester. "We want to test that thoroughly before we embark on a larger groundwater recharge effort."

A second project with a similar goal of providing more flexibility and certainty in short supply years is the Los Banos Creek Detention Dam. The Exchange Contractors Board of Directors voted in late September to initiate environmental reviews and enter design contracts on the Los Banos Creek Detention Dam project, with plans to start construction and begin utilizing the facility by next summer.

A feasibility study on re-operating the Bureau of Reclamation facility for additional surface water benefits for members of the Exchange Contractors, San Luis Water District, Grasslands Water District and the City of Los Banos has already shown promise for the project.

The Los Banos Creek Detention Dam re-operation could provide significant benefits including improved water supply reliability, recharge of local runoff, groundwater table stability, recreational and environmental enhancements at and near the dam, and improvements in water supply and quality for the City of Los Banos.

Hearings Held on SJR Flow Objectives

The State Water Resources Control Board in September held workshops on proposed San Joaquin River Flow Objectives, the measure by which it intends to increase flows from San Joaquin River tributaries to meet fishery objectives for the reintroduction of endangered salmon.

The Exchange Contractors has provided input to help ensure that proposed flow objectives are based on sound science. The Water Board has proposed establishing flow objectives for fish on the San Joaquin River at Vernalis just south of the Delta. The hearing was held to gather input on what those flows should be.

"Our interest is to make sure that the flow objectives are reasonable and do not impede our ability to secure water or interfere with our reserve water rights on the upper San Joaquin River," said SJRECWA Executive Director Steve Chedester.

More than three-dozen regulatory agencies and non-government groups representing water, fish and wildlife interests, were actively engaged in discussions related to the flow objectives. The Exchange Contractors will continue to be involved as these flows are established and implemented.

Entity Water Management Plans Open for Comment

Central California Irrigation District, San Luis Canal Company, Firebaugh Canal Water District, and Columbia Canal Company have drafted Agricultural Water Management Plans in accordance with requirements of SBx7-7. The entities are required to provide an opportunity for public participation.

The Draft AWMPs will be available for review at each of the member entities' offices from Nov. 1 through Nov. 30, 2012. They will be accepting written comments until close of business Dec. 14, 2012. Those interested in participating in the public process by reviewing the draft of either AWMP should contact Central California Irrigation District's General Manager Chris White at cwhite@ccidwater.org; San Luis Canal Company's General Manager Chase Hurley at churley@slcc.net; Firebaugh Canal Water District's General Manager Jeff Bryant at bryant_jeff@sbcglobal.net; or Columbia Canal Company's General Manager Randy Houk at rghccc@sbcglobal.net.